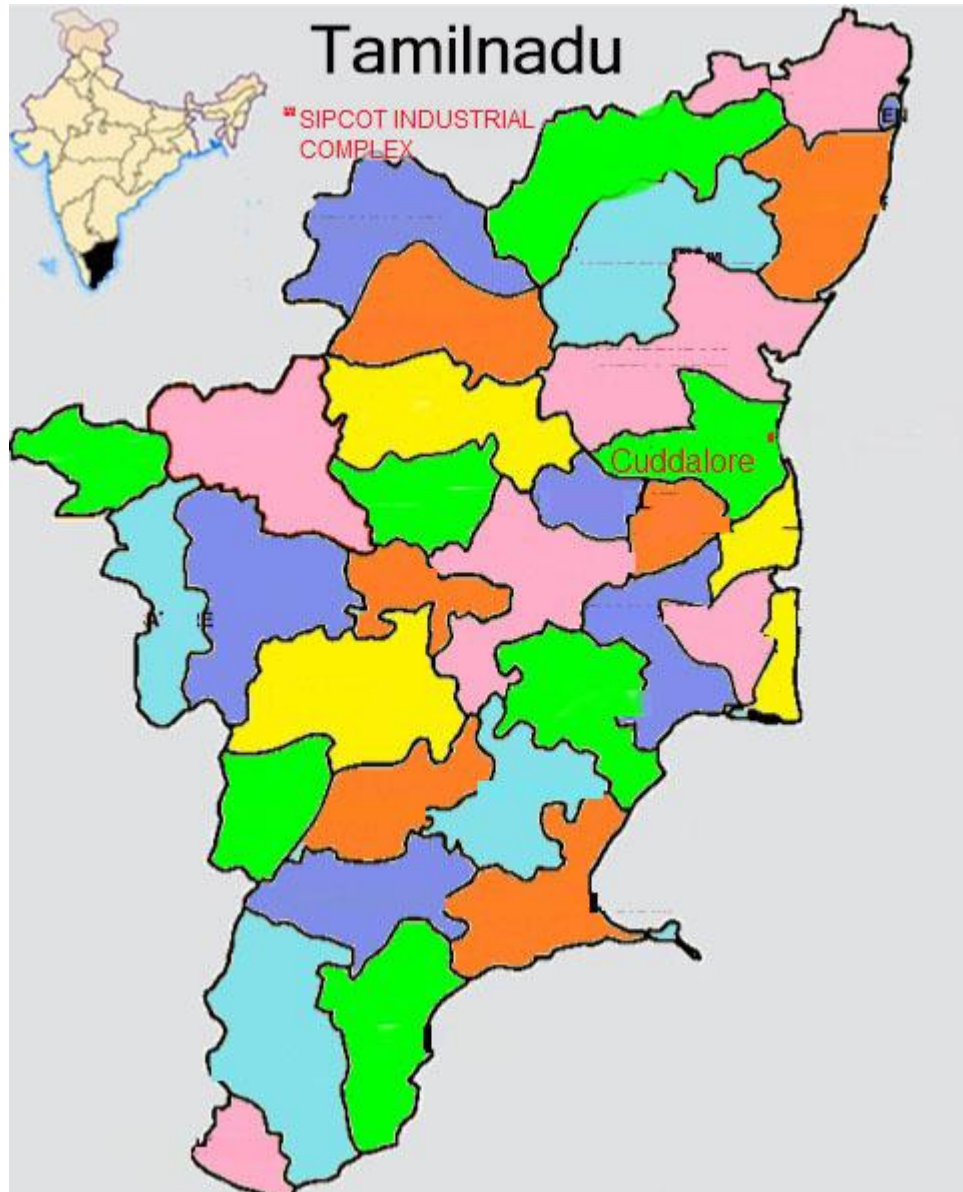


# EVALUATION OF CEPI SCORE & ACTION PLAN FOR CEPI AREA OF SIPCOT INDUSTRIAL COMPLEX, CUDDALORE



**SUBMITTED  
JANUARY 2020**

**TAMILNADU POLLUTION CONTROL BOARD**

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## **EXECUTIVE SUMMARY**

The Central Pollution Control Board has calculated the Comprehensive Environmental Pollution Index (CEPI) Score for the SIPCOT Industrial Complex in Cuddalore. The score for the years 2009, 2011, 2013 and 2017 was calculated to be 77.45, 54.69, 70.12, 62.56 respectively.

Based on the study report conducted during the period January 2018 the CEPI Score as per the revised guidelines of CPCB is calculated ( Air – 25, Water – 58.25, Land- 41.25) and the status as (An- Ws- Ln). The air and Land Environments are normal and the water environment was severely polluted.

The TNPCB has taken various initiatives to reduce the CEPI score of 77.45 of 2009 to 28.54 of 2019 post monsoon for the 17 Category industries and other Large and medium category industries in the CEPI area. The industries have installed Zero Liquid Discharge systems and other industries are disposing their treated effluent through the Common Marine disposal facility, functioning in the industrial complex.

The existing monitoring locations with respect to Air Quality monitoring and ground water sampling and surface water sampling are located in the core and impact zone of the CEPI area, in which the sampling were done to arrive the previous CEPI Scores. In addition to the existing Surface Water sampling locations, some additional surface water sampling locations were identified in the core zone and impact zone for the calculation of CEPI 2019. Surface water samples in the existing and additional locations were collected and analysed.

The Ambient Air Quality in the Northern and Southern boundary of Core Area were analysed.

The groundwater in the existing sampling locations were collected and analysed.

The details of industries, improvements made in Pollution Control Measures, Effluent Disposal methods are presented. The worked out scores for Air, Water and Land Environments are presented.

The CEPI Concepts and evaluation methodology is adapted as per the revised CPCB guidelines for the calculation of CEPI 2019 Post Monsoon.

Based on the study results the **CEPI score as per the revised CEPI index is Air – 25, Water – 16.0 and Land - 11.5.**

The overall CEPI Score for SIPCOT Industrial Complex Cuddalore for 2019 is **26.38** and the status as **A<sub>n</sub> – W<sub>n</sub> – L<sub>n</sub>.**

x—x—x

## 1. Introduction.

The SIPCOT Industrial Complex, Cuddalore was established during the year 1984. The Industrial complex has phase-I and phase-II where Textile processing, Pharmaceuticals, Dye, Chemicals, Pesticides and miscellaneous industries are located. The SIPCOT Industrial Complex, Cuddalore is located along the Cuddalore – Chidambaram High ways (NH 45-A). SIPCOT Phase-I has a total extent of 518.79 acres and SIPCOT Phase-II has a total extent of 190.52 acres. SIPCOT Phase-I and Phase- II are under CEPI area in Cuddalore district. The total area of SIPCOT Industrial Complex Cuddalore is 709.31 Acres (Phase I & Phase II).

Location: The SIPCOT Industrial Complex is surrounded by the following features.

North	Pachayankuppam Village
East	River Uppanar & Rasapettai and Sothikuppam villages
South	Sonanchavadi Village
West	NH-45-A connecting Cuddalore-Chidambaram

The average rainfall is around 105-140 cm. The maximum temperature during summer is 40°C and the minimum temperature during winter is 23°C. The relative humidity is around 70 – 90%.

### Map with Demarcations of Geographical Boundaries and Impact Zones:

The map showing the Cuddalore SIPCOT Industrial Complex, and the nearby areas surrounding a radius of 2 Km, 5 km and 10 Km is enclosed (Annexure – A1).

The Cuddalore town is the nearest residential and commercial area located at 6 Km on the Northern side of this SIPCOT Industrial complex.

### **1.1 CEPI Area Boundary details:**

Boundaries of (Core zone) Severely Polluted Area (SPA) are marked as Northern boundary of the SIPCOT Industrial Complex, Cuddalore lies between Latitude 11°42' 4.6"N and Longitude 079°45' 34.1"E and Latitude 11°41'45.5"N and Longitude 079°45'40.6"E. Southern boundary of the SIPCOT Industrial Complex, Cuddalore lies between Latitude 11°38' 10.2"N and Longitude 79° 44' 02.4"E and Latitude 11°38' 06.2" N and Longitude 79°44' 14.1"E.

## 1.2 Habitation details in CEPI Area:

The Pachayankuppam Panchayat comprising of Pachayankuppam, Thaikalthonithurai, Sothikuppam villages are located on the Northern side of the SIPCOT Estate. Kudikadu Panchayat comprised of Kudikadu, Kudikadu Colony, Echankadu, Rasapettai, Sangolikuppam, Sangolikuppam Part, Sangolikuppam Colony, Semmankuppam Panchayat comprised of Semmankuppam & Madhukarai, MettuSemankuppam, Semmankuppam Colony, Vairankuppam, Thatchan Colony, Sonanchavadi and Poondiyankuppam.

The details of the towns, villages, which are located around 2.0Km from the Industrial Complex is mentioned in Table-1.1.

**Table1.1**

Sl. No	Village Name	Location		Direction	Distance (km)	Population
		Latitude N	Longitude E			
1	Pachayankuppam	11°41'43.92"	79°45'48.33"	North	0.1	7857
2	Kudikadu	11°41'3.50"	79°45'23.15"	Within SIPCOT	0	4,839
3	Semmankuppam	11°39'13.37	79°44'16.99"	West	0.1	3042
4	Karaikadu	11°40'82.0"	79°44'38.51"	West	0.1	6,277
5	Sedappalayam	11°37'59.81"	79°43'52.35"	South west	0.1	5,337
				Total		27352

## 1.3 Eco Geological Features in and around CEPI Area:

There are no eco-geological features within 10 Km radius from the SIPCOT Industrial Complex, Cuddalore. Cuddalore has three major water bodies Thenpenniyar River, Gadilam River, Vellar River.

The Uppanar River which is passing adjacent to the SIPCOT Industrial Complex and all the river stretches contain back waters of sea in these final courses, and these river waters in the final courses are not used for any domestic or irrigation purposes in this stretch.

#### 1.4 Industries details in CEPI Area:

There are five 17 category industries and fourteen red category industries and ten orange and green category industries located in the industrial complex (Phase I & II).

Sl. No	Category / Size	Nos
1.	17 Category Red / Large	5
2.	Red / Large	11
3.	Red / Medium	2
4.	Red / Small	3
5.	Orange / Large	3
6.	Orange / Medium	0
7.	Orange / Small	3
8.	Green / Small	3
9.	Closed Industries	4
	Total	34

#### 1.5 Green Belt Development details in CEPI Area:

The industries in SIPCOT Industrial Complex, Cuddalore have developed green belt and the details are given below.

S. No.	Name of the Industry M/s.	Total area in Hectares	No of Trees developed Nos.		Proposed
			2017 -18	2018 -19	2019 -20
1.	CLARIANT CHEMICALS (I) LIMITED	9.43	5000		200
2.	TAGROS CHEMICALS INDIA (P)LTD.,	50	4000		100
3.	SOLARA ACTIVE PHARMA SCIENCES LIMITED, CUDDALORE	2.43	900	100	1500
4.	KAWMAN PHARMA	1.82	100	50	50
5.	TANFAC INDUSTRIES LIMITED	5.46	500	1000	500
6.	ASIAN PAINTS LIMITED	6.4	14000	1000	1000
7.	DFE PHARMA INDIA PRIVATE LIMITED	1.1	460	570	150
8.	LOYAL SUPER FABRICS	1.0	300	400	200
9.	R.K.EXPORTS (KARUR) PVT. LTD, CUDDALORE	0.8	1994	2011	100
10.	THANGAMMAN TEXTILE PVT LTD	1.02	205	260	125



11.	SUPREME DYE CHEM PVT LTD	0.5	10	10	10
12.	ARKEMA PEROXIDES INDIA PVT LTD	15	29456	31745	750
13.	PIONEER JELLICE INDIA P. LIMITED	3.82	400	350	350
14.	CHEMPLAST SANMAR LIMITED	9.31	35000	35025	200
15.	TATA CHEMICALS LTD	1.5	500	1600	400
16.	PANDIAN CHEMICALS LIMITED-APC UNIT, CUDDALORE	1.62	1290	1302	100
17.	AMCOR FLEXIBLES INDIA PVT LTD	0.80	185	205	20
18.	COVESTRO (INDIA) PRIVATE LIMITED	1.15	2590	110	100
19.	CRIMSUN ORGANICS PRIVATE LIMITED	0.5	-	920	300
	<b>Total</b>	113.56 Hectares	173548		6155

The species of trees planted are Azadiracta Indica (Neem), Tectona grandis (Teak), Cacus Nucifera (Coconut) , Azadiracta Manjifera (Mango), Pungamesia (Pungan), Fiscus Reliosa ( ArasaTree).

#### 1.6 CEPI score declared by CPCB:

The Central Pollution Control Board has calculated the Comprehensive Environmental Pollution Index (CEPI) Score for the SIPCOT Industrial Complex in Cuddalore. The score for the years 2009, 2011, 2013 and 2017 was calculated to be 77.45, 54.69, 70.12, 62.56 respectively. Based on the study report conducted during the period January 2018 the CEPI Score as per the revised guidelines of CPCB is calculated (Air – 25, Water – 58.25, Land- 41.25) and the status as (An- Ws- Ln).

Below given Table shows aggregated CEPI of present report in comparison with the CEPI Score 2011 & 2013, 2018 and CPCB report (2009).

Period	CEPI Score
2009	77.45
2011	54.69
2013	70.12
2018	62.56
2019	26.38

## SIPCOT Industrial Complex, Cuddalore, Tamil Nadu – CEPI 2018 by CPCB

### Air Quality Analysis Report

Pollutant	Groups	A1	A2	A(A1xA2)
PM <sub>10</sub>	B	0.5	Large	
PM <sub>2.5</sub>	B	0.5		
As	C	3		
		4	4	16

Pollutants	Avg. (1)	Std. (2)	EF [(3)=1/2]	No. of Samples Exceeding (4)	Total No. of Samples (5)	SNLF Value [(6) = 4/5x3]	SNLF Score (B)	
PM <sub>10</sub>	92.77	100	0.93	1	12	0.08	M	9
PM <sub>2.5</sub>	42.79	60	0.71	0	12	0.00	L	0
As	3.69	6	0.62	0	12	0.00	L	0
<b>B Score = (B1 + B2 + B3)</b>							B	9

C	0	< 5%
D	0	A-A-A

AIR EPI	(A + B + C + D)	25.00
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### Water Quality Analysis Report

Pollutant	Groups	A1	A2	A(A1xA2)
TDS	A	0.25	Large	
T. Hard	A	0.25		
Phenols	C	3		
		3.5	4	14

Pollutants	Avg (1)	Std (2)	EF [(3) =1/2]	No of Samples Exceeding (4)	Total no. of Samples (5)	SNLF Value [(6) = 4/5x3]	SNLF Score (B)	
TDS	2042.33	2000	1.02	1	3	0.34	M	4.25
T. Hard	676	600	1.13	3	3	1.13	C	10

Phenols	0.02	0.01	2.0	0	3	1.33	C	30
<b>B Value = (B1 + B2 + B3)</b>							B	44.25

C	0	<5%
D	0	A-A-A

Water EPI	(A + B + C + D)	58.25
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**Ground Water Quality Analysis Report**

Pollutant	Groups	A1	A2	A (A1xA2)
Phenols	C	3	Large	
Fe	A	0.25		
TP	B	0.5		
		3.75	4	15

Pollutants	Avg. (1)	Std. (2)	EF[(3)=1/2]	No of Samples Exceeding (4)	Total no. of Samples (5)	SNLF Value [(6) = 4/5x3]	SNLF Score (B)	
Phenols	0.0	0.0	0.5	0	12	0.0	L	0
Fe	0.56	0.30	1.87	6	12	0.94	H	21.75
TP	0.27	0.30	0.9	5	12	0.38	M	4.5
<b>B Value = (B1 + B2 + B3)</b>							B	26.25

C	0	< 5%
D	0	A-A-A

GW EPI	(A + B + C + D)	41.25
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AIR                    25.00  
WATER                58.25.00  
GROUND WATER    41.25  
**CEPI SCORE        62.56**

X—X—X

## 2. AIR ENVIRONMENT

### 2.1 Primary and Secondary Pollutants considered for AEPI

The Central Pollution Control Board has considered the Arsenic as the primary Pollutant and PM10 & PM 2.5 as Secondary Pollutant. Based on the study report conducted during the period January 2018 the CEPI Score as per the revised guidelines of CPCB is calculated as Air – 25 and the status as Anormal.

### 2.2 Air Quality Sampling Locations

The Air Quality Sampling Locations are given in the table below.

Sample Code	Name of the Monitoring Location	Latitude	Longitude
AAQ 1	Centre of SIPCOT Phase I & II (SIPCOT office)	N 11° 40'24.33"	E 079°44' 59.67"
AAQ 2	South Side of SIPCOT Phase I & II (Semmankuppam)	N 11° 39' 6.01"	E 079° 44' 9.08"
AAQ 3	West Side of SIPCOT Phase I & II (Karaikadu )	N 11° 40'40.43"	E 079°44'53.45"
AAQ 4	North Side of SIPCOT Phase I & II (Splended Udyog )	N 11° 41'43.55"	E 079° 45'39.25"

### 2.3 Status of AAQ in 2018 in CEPI Area

AAQ survey has been conducted in four places in the Core Zone Centre of SIPCOT Phase I & II (SIPCOT office), South Side of SIPCOT Phase I, & II (Semmankuppam), West Side of SIPCOT Phase I & II (Karaikadu ), North Side of SIPCOT Phase I, & II (Splendid Udyog).

The CEPI score (2018) of Air Environment in SIPCOT Complex is 25, which is below 50 and hence ranked as 'Normal'.

## 2.4 Industries Stack Emission Details

S. No	Company Name M/s.	Emission Sources	Air Pollution Control Measures	Stack Height Mtrs
1	Vivin Tex	Boiler	Cyclone Dust Collector	20
2	Tagros Chemicals	8 TPH(Coal) Boiler	Cyclone Separator	30
		6TPH(Wood) Boiler and 12TPH(Coal) Boiler(Common Stack)	Cyclone Separator	30
		3- Plant-I (CMAC) R-203 Vent 3-Plant-I (CMAC) R-204 Vent 3- Plant-5(Deltamethrin) R-104A,R-113 3- Plant-2(Hexaconazole) R-304,R-314 3 -Plant-2(Permethrin) R-220 Vent 3-Plant 1 (CMAC) R214, R218, 214A	Stack	4
		4-Ejector sump vent	Stack	5
		Water Ring Vacuum Sump Vent	Stack	6
		1. Process wet scrubber	Stack	17.3
3.	Covestro (India) Private Limited	2. Thermic Fluid oil heater	Stack	31.9
4.	Asian Paints Limited	Boiler	Bag filter and Stack	42
5.	Tata Chemicals Limited	Boiler 6TPH	Cyclone dust collector	30
		Coal fire hot air generator	Modulating dust collector, Cyclone separator with stack	35
		Process dryer	Stack	25
6.	THANGAMMAN TEXTILE PVT LTD	Boiler 5TPH	Cyclone dust collector with stack	21
7	Clariant	Boiler 8TPH	Stack	37.5

	Chemicals(india)Limited	Reactor	Stack	20
		Blue plant milling Hot air Generator	Bag Filter with Stack	17
		Blue Plant Ball Mill	Stack	25
8	Pioneer Jellice India Pvt. Limited	Dicalcium Phosphate Drier	Bag Filter with Stack	14
		Boiler 15T/hr. (Coal Fired)	MDC, Wet Bottom Scrubber with Chimney provided	30
		Power Generator 1238 Kva	Stack	30
9	AMCOR FLEXIBLES INDIA PVT LIMITED	Chrome Plating Section	Wet Scrubber	15
		Nickel Plating Section	Stack	7
		Copper Plating - I	Stack	7
		Copper Plating – II	Stack	7
		Degreasing Machine	Stack	7
		De chrome Machine	Stack	7
		Proofing Machine	Stack	8
10	R.K.Exports (Karur) Pvt. Ltd, Cuddalore-5	Boiler	Cyclonic Dust Collector with stack	30
11	Kawman Pharma	Boiler	Stack	30
		Reactors	Wet scrubber Stack	9
12	CRIMSUN ORGANICS PRIVATE LIMITED	Oil Fired Boiler – 3 TPH	Stack	25
		Reactors (14 Nos).	Stack	25
		Reactors (8 Nos out of 14)	Stack	25
13	LOYAL SUPER FABRICS	Boiler	Dust Collection System	30
14	Pandian Chemicals Limited	Boiler	Providing packed bed with Alkali scrubber	30
		Electrolytic Cell	Cyclone separator with stack	10
15	DFE Pharma India Private Limited	Boiler 4 T/hr	Dust Collector with Stack	30
		Spray Drier	Stack	30
		Hot Air Generator	Twine cyclone, Quadra cyclone & stack	30

16	SUPREME DYECHEM PVT LTD	Boiler	Dust Collector with Stack	30
17	M/s Solara Active Pharma Sciences Limited, Cuddalore-05	Reactor Acid fume emission from Production Block -II	Scrubber with Stack	15
		Reactor organic emission from Production Block II	Scrubber with Stack	15
		Mercaptan emission from Block – II&VC	Scrubber with Stack	27
		Reactor organic emission from production Block – III	Scrubber with Stack	12
		Reactor acid fume emission from production Block – III	Scrubber with Stack	13
		Fugitive emission from equalization tank	Scrubber with Stack	20
		12T Bio briquettes fired boiler	Bag Filter and Mechanical dust collector	42
		Reactor Acid fume emission from Production Block-VA	Scrubber with Stack	24
18	Chemplast Sanmar limited	Boiler	Reverse jet bag filter outlet	54
		Vent gas absorption system	Reverse jet bag filter outlet	20
		Drier stack	Reverse jet bag filter outlet	44
		Emergency Vent attached to VCM Storage Tank	Bin Vent Filter	60
		Coal Heading Conveyor- Transfer Point- 1- Coal Crusher	Bin Vent Filter	15.5
		Coal Heading Conveyor- Transfer Point- 2- Coal Bunker	Bin Vent Filter	22.75
		Coal Feed Hopper	Multi cyclone and Wet scrubber	-
		PVC Bagging Section- Bagging machine- 3 nos.	Bag Filter	21
		Product Silo- 3 nos.	Bag Filter	54
19	TANFAC Industries	Anhydrite plant –Wet scrubber	Packed bed scrubber	23.4

Limited	Combustion Chamber(HFkiln)	Stack	40
	Central Absorption System HF alkali scrubber outlet	Acid scrubber ventri Scrubber catower	35
	SFLplant-wet scrubber out let	Stack	24
	Sulphuric acid plant stack 1-alkali scrubber	Stack	42
	Sulphuric acid plant stack 2-alkali scrubber	Packed bed scrubber	42
	Boiler 10T/hr-MDC outlet	alkali scrubber	40
	Fluor spar drier	alkali scrubber	28
	BF3 plant scrubber	Dust collector	9.0
	PAC scrubber	Cyclone sepaator	32
	Central absorption system Alf3 Scrubber	Packed Scrubber	35
	AL(OH3) drier	Stack	24
	Spray drier burner	Cyclone barometric condenser	26
	Spray drier scrubber	PTFE bags cyclone separator Bag house	24
	Average stack Height	24.9	

Therefore the Ground Level Emission Concentration is 249 Meters from the core zone (Average stack Height  $24.9 \times 10 = 249$  Meter).

## 2.5 Quantification of Stack Emission Load:

### 2017-2018

#### 1.Vivin Tex:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	45.37	70	0.001	-	-	-	-	-	-



**2. Tagros Chemicals India Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler 8T	640673.5	52	8.03	19.5	4.12	77.5	16.38	-	-
Boiler 12T	652267.7	79	8.96	22.67	4.8	84.33	18.15	-	-

**3. Covestro India Private Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Thermopac Heater	3207	21	0.53	12	0.30	32	0.812	110	8.466
Process Stack- Scrubber	6740	10	0.53	NA	0	NA	0	2	0.323

**4. Asian Paints Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler Stack	373488	43.31	5.3	47.08	5.7	168.08	20.71		-

**5. Tata Chemicals Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler 6TPH	219452	43	3.1	27	1.94	0.07	0.99	-	-
Coal fire hot air generator	56221	42	0.77	23	0.429	45	0.825	-	-

**6. Thangamman Textiles Private Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	4.537	44	0.001	46	0.001	160	0.0057	-	-

**7. Clariant Chemicals (India) Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Blue plant Hot air generator	257126.6	0.89	1.15	0.306	0.27	0.129	0.653		-
Boiler -8 TPH	598819.5	98	1.91	0.17	1.15	1.19	0.165		

**8. Pioneer Jellice India Pvt. Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	823779	31	5.6	13	1.95	27	4.9		-
DCP Dryer	621331	41	8.3	6.6	1.35	20	4.09		-
Biogas Engine 1169 KW	359238	24	2.84	15	1.18	10.0	5.8		

**9. R.K Exports (Karur) Pvt Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	823779	31	5.67	-	-	-	-	-	-

**10. Kawman Pharma:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	1245 485	42	<b>0.25</b>	18.5	0.11 2	42	0.25	-	-

**11. Loyal Super Fabrics:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	411815	40.16	12.35	13.54	4.89	42.66	12.34	-	-

**13. Vivin Tex:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	411810	40.0	11.85	7.6	4.56	40	11.05	-	-

**14. Pandian Chemicals Limited:**

Stack details	Flow Rate (m <sup>3</sup> /hr)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	25389	30	0.25	<b>11</b>	<b>0.08</b>	3.68	<b>0.03</b>	-	-

**15. DFE Pharma India Private Limited:**

Stack details	Flow Rate (m <sup>3</sup> /Hr)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	10634	49.9	7.5	49.4	7.49	52.5	7.95	-	-
Hot Air Generator	4670	58.9	2.17	72.4	2.63	83.4	3.06	-	-

Spray Drier	6059	27.3	1.28	0	0	0	0	-	-
Boiler 4 T/hr	36233	37	0.44	7	0.08	29	0.34		

#### 16. Solara Active Pharma Sciences Limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	674128	39.5	8.64	18	4.0	36	8.005	-	-

#### 17. Chemplast Sanmar limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Bagging machine 'A'	70973	21.5	0.5	-	0	-	-	-	-
Bagging machine 'B'	72825.5	16	0.38	-	0	-	-	-	-
Bagging machine 'C'	71881.5	24.5	0.58	-	0	-	-	-	-
Silo-'A'	119660.5	22	0.86	-	0	-	-	-	-
Silo-'B'	131720.5	27.5	1.19	-	0	-	-	-	-
Silo-'C'	131730.5	22.5	0.97	-	0	-	-	-	-
PVC dryer	2271339	21	15.74	-	0	-	-	-	-
Coal crusher-	189074.5	21	1.31	-	0	-	-	-	-
Coal bunker-	170982	21	1.18	-	0	-	-	-	-
Boiler-ESP outlet	674128	39.5	0.77	18	4.0	36	8.0		

#### 18. TANFAC Industries Limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Anhydrite plant –Wet scrubber	302991	18	1.79			-	-	-	-
Combustion Chamber(H Fkiln)	510572	68	11.45	15.5	25.27	65	10.14	-	-

Central Absorption System HF alkali scrubber outlet	47408	15	0.23	134	0.98	-	-	-	-
SFL plant-wet scrubber outlet	27740	-	-	15	0.28	4	0.03	-	-
Sulphuric acid plant stack 1-alkali scrubber	192011	-	-	5.475	0.03	4	0.03	-	-
Sulphuric acid plant stack 2-alkali scrubber	191408	-	-	292	19.0	22	1.32		
Boiler 10T/hr-MDC outlet	870016	44	12.63	297.5	19.57	24	1.32		
Fluor spar drier	229071	12	0.90	28	8.6	87	25.24		
BF3 plant scrubber	19175	9	0.05	39.5	3.17	66	5.13		
PAC scrubber	16520	10	0.05	7.05	0.69	52	0.003		
Central absorption system AlF3 Scrubber	51207	9	0.15	67.5	0.38	14	0.062		
AL(OH3) drier	231884	23	1.75	12	0.10	-	-		
Spray drier burner	198003	88	5.74	38	2.82	45	3.4		
Spray drier scrubber	274124	6	0.54	30.49	10.06	93	6.59		

## 2018-2019

### 1.Vivin Tex:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	4.537	45	0.00204	-	-	-	-	-	-

## 2. Tagros Chemicals India Limited:

Stack details	Flow Rate (m <sup>3</sup> /Hr)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler 8T	9172.84	43.63	9.60	16.52	3.64	66.75	14.69	-	-
Boiler 12T	647630	40.2	26.03	21.4	13.85	81.6	52.84	-	-

## 3. Covestro India Private Limited:

Stack details	Flow Rate (m <sup>3</sup> /hr)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Thermopac Heater	4059	21	1.616	12	0.924	32	2.462	110	8.466
Process Stack-Scrubber	7317	10	1.617	0	0	0	0	2	0.323

## 4. Asian Paints Limited:

Stack details	Flow Rate (m <sup>3</sup> /hr)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler Stack	689516	43.31	29.86	47.08	32.46	168.08	115.89		-

## 5. Tata Chemicals Limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler 6TPH	219452	43	9.4	27	5.9	47	10.31	-	-
Coal fire hot air generator	56221	42	2.36	23	1.3	45	2.5	-	-

## 6. Thangamman Textiles Private Limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	1041560	43.75	45.56					-	-

### 7. Clariant Chemicals (India) Limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Blue plant Hot air generator	257126.6	0.89	3.5		0.84		1.98		-
Boiler -8 TPH	598819.5	98	58.6	6.6	3.95	24	14.37		

### 8. Pioneer Jellice India Pvt. Limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	953384	31	29.55	13	12.39	27	25.74		-
DCP Dryer	619738	34	21.07	2.19	1.35	17	10.53		-

### 9. R.K Exports (Karur) Pvt Limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	32825	43	1.411	45	1.477	134.5	4.41	-	-

### 10. Kawman Pharma:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	1245485	42	0.76	18.5	0.34	42	0.76	-	-

**11. Crimsun Organics Pvt Ltd:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler 3 TPH	2880 0	38	1.09	8	0.23	38	1.09	-	-

**12. Loyal Super Fabrics:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	411815	40.16	37.44	13.54	14.825	42.66	37.4	-	-

**13. Loyal Super Fabrics:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	411815	40.16	37.44	13.54	14.825	42.66	37.4	-	-

**14. Pandian Chemicals Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	609336	28	17.8	2.13	3.5	34.8	22.1	-	-

**15. DFE Pharma India Private Limited:**

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	86960 2	37	17.8	7	6.0	29	25.2	-	-



Hot Air Generator	171187	34	5.8	43	7.3	39	6.6	-	-
Spray Drier	1140309	37	42.1	0	0	0	0	-	-

### 16. Solara Active Pharma Sciences Limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Boiler	647722	33.38	21.62	-	-	-	-	-	-

### 17. Chemplast Sanmar limited:

Stack details	Flow Rate (m <sup>3</sup> /day)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Bagging machine 'A'	70973	21.5	1.53	-	0	-	-	-	-
Bagging machine 'B'	72825.5	16	1.17	-	0	-	-	-	-
Bagging machine 'C'	71881.5	24.5	1.76	-	0	-	-	-	-
Silo-'A'	119660.5	22	2.63	-	0	-	-	-	-
Silo-'B'	131720.5	27.5	3.62	-	0	-	-	-	-
Silo-'C'	131730.5	22.5	2.96	-	0	-	-	-	-
PVC dryer	2271339	21	47.70	-	0	-	-	-	-
Coal crusher-	189074.5	21	3.97	-	0	-	-	-	-
Coal bunker-	170982	21	3.59	-	0	-	-	-	-
Boiler-ESP outlet	54998.5	40	52.8	29.5	39.31	121	160.37		

### 17. TANFAC Industries Limited:

Stack details	Flow Rate (m <sup>3</sup> /Hr)	PM mg/Nm <sup>3</sup>	Pollution load Kg/day	SO <sub>2</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	NO <sub>x</sub> mg/Nm <sup>3</sup>	Pollution load Kg/day	CO mg/Nm <sup>3</sup>	Pollution load Kg/day
Anhydrite plant –Wet scrubber	297948	16	4.7	15.5		-	-	-	-
Combution Chamber(HFkiln)	269697	57	15.37	134	76.58	65	30.74	-	-
Central Absorption	50180	13	0.6	56	2.98	-	-	-	-

System HF alkali scrubber outlet									
SFLplant-wet scrubber out let	29751	-	-	5.47 5	57.60	4	4.03		
Sulphuric acid plant stack 1-alkali scrubber	197841	-	-	292	59.33	22	4.01		
Sulphuric acid plant stack 2-alkali scrubber	197068	-	-	297. 5	26.10	24	76.5		
Boiler 10T/hr-MDC outlet	859827	44	37.8	28	9.62	87	15.5 7		
Fluor spardrier	230679	10.5	2.4	39.5	2.12	66	0.01		
BF3 plant scrubber	20648	9	0.18	7.05	1.18	52	0.19		
PAC scrubber	16193	10	0.16	67.5	0.33	14	-		
Central absorption sytem Alf3 Scubber	47860	15	0.71	12	8.57	-	10.4 3		
AL(OH3) drier	233466	26	6.0	38	30.49	45	19.9 8		
Spray drier burner	202090	83	16.7	147. 5		93			
Spray drier scubber	154576	8	1.23	-		-			

## 2.6 Consolidated Stack Emission Load in CEPI Area:

Name of the unit contributing the Pollution load (2017 – 2018)	Pollution load Kg/day		
	PM	SO <sub>2</sub>	NO <sub>2</sub>
M/s. VIVIN TEX	0.001	0	0
M/s. Tagros Chemicals India Ltd (Boiler 8T)	16.99	8.92	34.53
Covestro India Private Limited	1.06	0.3	0.812
M/s. Asian Paints Ltd (Boiler Stack)	5.3	5.7	20.71
Tata Chemicals Limited	3.87	2.369	1.815
Thangamman Textiles Private Limited (Boiler)	0.001	0.001	0.0057
Clariant Chemicals (India) Limited	2.8	1.42	0.818
Pioneer Jellice India Pvt. Limited	16.74	4.48	14.79
M/s. R.k. Exports (Karur)Pvt Ltd (Boiler	5.67	0	0
M/s. Kawman Pharma (Boiler)	0.25	0.112	0.25
M/s. Loyal Super Fabrics	12.35	4.89	12.34
M/s. Thangamman Textiles	11.85	4.56	11.05
M/s. Pandian Chemicals	0.25	0.08	0.03

DFE Pharma India Private Limited	11.39	10.2	11.35
M/s. Solara Active Pharma Ltd, (Boiler)	8.64	4	8.005
M/s. Chempalst Sanmar Ltd	23.48	4	8
M/s. TANFAC Industries Limited	35.28	90.95	53.265
Total	155.922	141.982	177.7707

Name of the unit contributing the Pollution load (2018 – 2019)	Pollution load Kg/day		
	PM	SO <sub>2</sub>	NO <sub>2</sub>
M/s. VIVIN TEX (Boiler)	0.0020 4	0	0
M/s. Tagros Chemicals India Ltd (Boiler 8T)	35.63	17.49	67.53
Covestro India Private Limited Thermopac Heater	17.77	0.9	2.4
M/s. Asian Paints Ltd (Boiler Stack)	29.86	32.46	115.89
Tata Chemicals Limited Boiler 6TPH	11.76	7.2	12.81
Thangamman Textiles Private Limited (Boiler)	45.56	0	0
Clariant Chemicals (India) Limited Blue plant Hot air generator	62.1	4.79	16.35
Pioneer Jellice India Pvt. Limited Boiler	50.62	13.74	36.27
M/s. R.k. Exports (Karur)Pvt Ltd (Boiler	1.411	1.477	4.41
M/s. Kawman Pharma (Boiler)	0.76	0.34	0.76
M/s. Crimsun Organics PVT Ltd (Boiler 3 TPH)	1.09	0.23	1.09
M/s. Loyal Super Fabrics (Boiler)	37.44	14.825	37.4
M/s. Pandian Chemicals (Boiler)	17.8	3.5	22.1
DFE Pharma India Private Limited (Boiler)	65.7	13.3	31.8
M/s. Solara Active Pharma Ltd, (Boiler)	21.62	0	0
M/s. Chempalst Sanmar Ltd (Bagging machine 'A')	121.73	39.31	160.37
M/s. TANFAC Industries Limited (Anhydrite plant – Wet scrubber)	85.85	274.9	161.46

The average pollution load of emissions in the CEPI Area for 2017 – 2018 and 2018 – 2019 is PM 179 Kg/day, SO<sub>2</sub> 151.05 Kg/day, NO<sub>x</sub> – 206.12 Kg/day, and the average stack height is 24.9 meter.

## 2.7 Status of AAQ during November /December, 2019:

The Status of CAAQM for the month of November is given below.

Tamil Nadu State Pollution Control Board Online Pollution Monitoring Portal					
From Date: 01-11-2019		To Date: 30-11-2019			
Date & Time	PM <sub>10</sub> µg/m <sup>3</sup>	PM <sub>2.5</sub> µg/m <sup>3</sup>	SO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>x</sub> µg/m <sup>3</sup>	O <sub>3</sub> µg/m <sup>3</sup>
Prescribed Standards	0 - 100	0 - 60	0 - 60	0 - 60	0 - 180
Min	9.76	8.58	4.67	5.38	4.5
Min Detected at:	Prescribed Standards	2019-11-16	2019-11-13	2019-11-06	2019-11-19
Max	35.32	33.19	18.87	9.54	5.98
Max Detected at:	2019-11-07	2019-11-07	2019-11-27	2019-11-28	2019-11-10
Avg	19	16.96	11.17	7.27	5.04

## 2.8 Conclusion

The sampling locations are fixed based on the upwind, downwind, crosswind of the industrial cluster. The Average pollution load of emissions for the year 2017 – 2019 in the CEPI Area is PM 179.07 Kg/day, SO<sub>2</sub> 151.05 Kg/day, NO<sub>x</sub> – 206.12 Kg/day, and the average stack height is 24.9 meter. Based on these the concentration of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub> in all the locations are well below the NAAQM Standards.

The CEPI Score of 2017 – 2018 is 62.56 and after all the action plan taken, the present CEPI Score for Air Environment is 25. Based on the annual average results of CAAQM station for the period from 2017 – 2019 for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> is 37.31 µg/m<sup>3</sup>, 23.53 µg/m<sup>3</sup>, 12.55 µg/m<sup>3</sup>, 4.73 µg/m<sup>3</sup> respectively.

The present continuous AAQM Monthly Average data for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> is 19.0 µg/m<sup>3</sup>, 16.96 µg/m<sup>3</sup>, 11.17 µg/m<sup>3</sup> and 5.04 µg/m<sup>3</sup>.

CEPI Score as per the revised guidelines of CPCB is calculated as **Air – 25** and the status as **A<sub>normal</sub>**.

X—X—X

### 3. WATER ENVIRONMENT:

#### 3.1 Primary and Secondary Pollutants considered for SWEPI

Phenol is considered as the Primary Pollutant, TDS and Total Hardness are considered as secondary Pollutants for the SWEPI calculation.

#### 3.2 Surface Water Quality Sampling Locations

Sample Code	Name of the Sampling Locations	Latitude N	Longitude E
SW 1	Poondiyankuppam Village U/S of Uppanar River	11° 40' 24.354"	79° 44' 59.49"
SW 2	Nochikadu Village U/S of Uppanar River	11° 39' 05.59"	79° 44' 34.333"
SW 3	Behind Kudikadu Village	11° 40' 44.1"	79° 45' 36.125"
SW 4	Thaikal Thony Thurai D/S of SIPCOT	11° 41' 29.9"	79° 45' 57.52"

#### Additional surface water samples locations for 2019:

S.No.	Location	Coordinates
1.	Sedapalyam Eri	Lat - 11° 40' 19.73" N Long - 79° 43' 48.98" E
2.	Pullikuthi Vaikkal	Lat - 11° 40' 0.28" N Long - 79° 43' 26.10" E
3.	Pullikuthi Vaikal	Lat - 11° 39' 49.17" N Long - 79° 44' 10.21" E
4.	Perumal Eri	Lat - 11° 36' 13.22" N Long - 79° 41' 45.46"E

#### 3.3 Details of Effluents generation from major Industries located in CEPI Area

Sl. No	Name of the Industry	Sources of Trade Effluent	Quantity KLD
1	CLARIANT CHEMICALS(INDIA)LIMITED	Process effluent, Boiler Blow down, Cooling Tower blowdown, RO Plant reject.	577.0
2	TAGROS CHEMICALS INDIA (P)LTD	Process effluent, Boiler Blow down, Cooling Tower blow down, RO Plant reject.	101.0

3	SOLARA ACTIVE PHARMA SCIENCES LIMITED	Process effluent, Boiler Blow down, Cooling Tower blow down, RO Plant reject.	87.0
4	KAWMAN PHARMA (A DIVISION OF K.P.MANISH GLOBAL INGREDIENTS PVT LTD)	Process effluent, Boiler Blow down, Cooling Tower blow down, RO Plant reject.	17.5
5	CRIMSUN ORGANICS PRIVATE LTD	Process effluent, Boiler Blow down, Cooling Tower blowdown, RO Plant reject.	87.0
6	TANFAC INDUSTRIES LIMITED	Process effluent, Boiler Blow down, Cooling Tower blowdown, RO Plant reject.	1575.0
7	ASIAN PAINTS LIMITED, PENTA DIVISION	Process effluent, Boiler Blow down, Cooling Tower blowdown, RO Plant reject.	75.42
8	DFE PHARMA INDIA PRIVATE LIMITED	Process effluent, DM Plant regeneration, Boiler Blow Down.	141.0
9	LOYAL SUPER FABRICS	Process effluent, Boiler Blow down, Cooling Tower blow down, RO Plant reject.	618.0
10	VIVIN TEX	Process effluent, Boiler Blow down, Testing Lab, Softening Plant regeneration.	186.8
11	R.K.EXPORTS (KARUR) PVT. LTD	Process effluent, Boiler Blow down.	366.0
12	THANGAMMAN TEXTILE PVT LTD	Process effluent, Boiler Blow down, Cooling Tower blow down, RO plant reject.	750.0
13	SUPREME DYECHEM PVT LTD	Process effluent, Boiler Blow down, Cooling Tower blow down.	12.0
14	ARKEMA PEROXIDES INDIA PRIVATE LTD	Process effluent, Cooling Tower blowdown.	85.0
15	PIONEER JELLICE INDIA P. LIMITED	Process effluent, Boiler Blow down, Cooling Tower blowdown, RO Plant reject.	5000.0
16	CHEMPLAST SANMAR LIMITED (PVC PLANT)	Process effluent, Boiler Blow down, Cooling Tower blow	1773.0

		down, RO Plant reject.	
17	TATA CHEMICALS LTD	From process, filter press filtrate, boiler blow down.	960.0
18	PANDIAN CHEMICALS LIMITED	Process effluent & Boiler blow down	13.0
19	AMCOR FLEXIBLES INDIA PVT LTD	Process effluent, R.O reject.	5.0
20	COVESTRO (INDIA) PRIVATE LIMITED	Process effluent, Drum washings, Lab washings.	2.5
21	SUDHAKAR CHEMICALS	Process Effluent	4.15
22	PANDA BIO PROTEIN	Process Effluent	10
23	GOLDEN FISH MEAL AND FISH OIL COMPANY	Process effluent	25

The Effluent Treatment Plant provided by the individual units are given below.

**1. M/s. Clariant Chemicals (India) Limited.**

Sl. No	Name of the Treatment Unit	No. of Units	Dimension (m)
1.	Equalization Tank	1	8.8*4.5
2.	Primary Clarifloculator	1	5(dia)*1.9
3.	Clarifloculator	1	5(dia)*2.5
4.	Equalization Basin	1	10*10*6.5
5.	Aeration Tank-1	1	12.5*7.5*7.2
6.	Aeration Tank-2	1	12.5*7.5*7.2
7.	Secondary clarifier	2	9.8(dia)*3.0
8.	Marine pit	1	5.3*2.2*0.75
9.	Impervious Pond	1	80*20*1.4
10.	Lime Preparation Tank	3	5*5*2

11.	Flash Mixer	3	3*3*3
12.	Holding Tank	1	13.8*13.8*2.8
13.	Equalization tank	1	13.8*13.8
14.	Flash mixer	3	2*2*3
15.	Clarifier	1	9(dia)*2.5
16.	Thickener	1	2.4(dia)*2.2
17.	Holding tank	1	9*11*2
18.	Filter Press	1	3*1
19.	RO Plant	1	650 KLD

## 2. M/s. Tagros chemicals India private limited

S.No	Name of the Treatment Unit	No. of Units	Dimension
1.	Collection Tank	1	3.18 (Dia) * 5
2.	Flash Mixer	1	2.7*2.7*1.4
3.	Flocculation Tank	1	2.7*2.7*1.4
4.	Lamella Plate Filter	1	1*1.5*0.8
5.	Sludge Drying Bed	1	4.65*4.65*2
6.	Collection Tank	1	12.7*5.7*2.7
7.	Equalization tank	1	8.82*3.83*3.06
8.	Neutralization Tank	1	2.6*2.6*2.6
9.	Flash Mixer	1	1*1*1
10.	Lamella Plate Filter	1	1.5*1*0.8
11.	Filter Feed Collection tank	1	3.8*3.3*2.9
12.	Dual media Filter	1	0.8 (Dia) * 2
13.	Treated Effluent Collection Tank	1	3.72*3.7*2.58



14.	MEE Feed tank/RO II Reject Tank	1	5.6*3.71*2.4
15.	Multi Effect Evaporator	1	10 KL/ Hr
16.	Multi Effect Evaporator(Spare)	1	7 KL/Hr
17.	Condensate Collection Tank	1	1.4 (Dia)*1.4
18.	Pressure Sand Filter	1	0.8 (Dia)*1.5
19.	Activated Carbon Filter	1	0.8 (Dia) * 2
20.	Filter Water Collection Tank	1	4.92*1.93*2.2
21.	RO Feed Tank	1	5.6*3.71*2.4
22.	Sand Filter	2	0.927 (Dia)*1.856
23.	RO-I Disc Type	1	241 m3/day
24.	RO-I Permeate Tank	1	5.6*2.92*2.4
25.	RO Reject Tank	1	5.6*2.92*2.4
26.	RO-II Spiral Type	1	150 m3/day
27.	Agitated Thin film drier	1	1.5 m3/hr
28.	Agitated Thin film drier	1	.85 m3/hr
29.	ML Tank	1	5.6*2.9*2.4
30.	Spare Tank	1	17*8*3

### 3. Solara Active Pharma Sciences Limited

S.No	Name of the Treatment Unit	No. of Units	Dimension
1.	Equalisation tank-I	1	7.2*4*4
2.	Equalisation tank-II	1	6.8*4*4
3.	Flash Mixer-I	1	1*1*1.5
4.	Flocculator-I	1	1.5*1.5*1.5
5.	Primary clarifier	1	3.5*3.5*2
6.	Aeration tank-I	1	14.5*5*6.65
7.	Secondary clarifier-I	1	3.5*3.5*2
8.	Aeration tank-II	1	14.5*5*6.65
9.	Secondary clarifier-II	1	3.5*3.5*2
10.	Flash Mixer-II	1	1*1*1.5
11.	Flocculator-II	1	1.5*1.5*1.5
12.	Tertiary Clarifier	1	3.5*3.5*2
13.	Treated water Storage tank	1	3*2.5*4
14.	Primary collection tank -1	1	9.7*9.7*2.7
15.	Primary collection tank -2	1	9.7*9.7*2.7
16.	Clarifier-III	1	3*2.5*4
17.	Clarifier-IV	1	3*2.5*4
18.	Chemical Treatment system for Lean effluent-2nos	2	20
19.	Coagulation tank (PAC)	1	1.2*0.95*1.35
20.	Coagulation tank (PE)	1	0.4* 0.60*1.10
21.	Dewatering system Centrifuge - 3Nos	3	Feed - 5 kl/hr
22.	Oil skimmer	1	Feed-15 kl/hr
23.	Dissolved Air Flotation (DAF)	1	Feed-10 kl/hr
24.	Sludge thickener	1	4m dia * 2m SWD
<b>ZLD System</b>			
25.	Reverse Osmosis (R.O)	1	Feed - 11.4 kl/hr

26.	Multiple Effect Evaporator (MEE)	1	Feed - 10000 kg/hr
27.	Agitated Thin Film Dryer (ATFD) - 1 No	1	Feed - 1610 kg/hr
28.	Agitated Thin Film Dryer (ATFD) - 2 Nos	2	Feed - 1412 kg/hr – each

#### 4. M/s. Kawman Pharma (A Division of K.P.Manish Global Ingredients Pvt Ltd).

S.No	Name of the Treatment Unit	No. of Units	Dimension
1	Lamella clarifier	1no	1.2mL*1.2m W * 1.9m D
2	Sequential batch reactor	1 no	Capacity-58.33 Cum and Diameter 5.0m
3	Sludge Drying Bed	2 nos	2.0 m L *1.0m W * 1.5m D
4	Sand and Activated carbon filter	1 nos	327 mm diameter and filtration rate- 12.3m <sup>3</sup> /hr
5	Treated water collection tank	1 no	3 m*3m*1m= 9 m <sup>3</sup>

#### 5. M/s. CRIMSUN ORGANICS PRIVATE LIMITED

S.No	Name of the Treatment Unit	No. of Units	Dimension
1.	Oil and Grease Trap	1 No.	3.9 m x 1.3 m x 2.0 m
2.	Collection Pit	1 No.	5.6 m x 2.9 m x 2.0 m
3.	Neutralizer Pit	2 Nos.	1.9 m x 1.9 m x 1.5 m

4.	Sand Filter	2 Nos.	1.95 m x 1.95 m x 1.5 m
5.	Sand Filter Pit	2 Nos.	1.15 m x 1.15 m x 1.5 m
6.	Collection Tank	1 No	2.1 m Dia x 2.9 m Ht
7.	MEE Feed Tank	1 No.	2.1 m Dia x 3.5 m Ht
8.	Multiple Effect Evaporator (Triple Effect)	1 No.	48 KL/day
9.	POT Distillation Reactor - 1	1 No.	6.3 Cum
10.	POT Distillation Reactor - 2	1 No.	3.0 Cum
11.	Collection Tank	1 No.	2.0 m Dia x 1.8 m Ht
12.	MBBR Tank	2 Nos.	3.5 m x 4.9 m x 6.0 m
13.	Aeration Tank (ASP)	1 No.	3.5 m x 10.5 m x 5.4 m
14.	Clarifier	1 No.	2.0 m Dia x 2.5 m Depth
15.	Pressure Sand Filter	1 No.	0.46 m Dia x 1.625 m Ht
16.	Activated Carbon Filter	1 No.	0.46 m Dia x 1.625 m Ht
17.	Filter Press	1 No.	0.65 m x 0.65 m
18.	RO Feed Tank	1 No.	2.1 m Dia x 2.9 m
19.	RO System	1 No.	4.5 Cum/Hr
20.	RO Permeate Tank	1 No.	2.1 m Dia x 2.9 m
21.	RO Reject Collection Tank	1 No.	2.0 m Dia x 1.8 m

## 6. M/s. TANFAC Industries Limited

S.No	Name of the Treatment Unit	No. of Units	Dimension
1.	Collection tank	3	4.75 dia x2 ht each
2.	Neutralization tank	2	4.75 dia x2 ht each
3.	Clariflocculator	1	12dia x 24inch
4.	Filter Press	1	24" X 24" 35 plates
5.	Sludge drying beds	2	10x10x1
6.	Treated water tank	1	2.5x2.5x1.7
7.	Lime preparation tank	2	54 M3
8.	Sand filter / Alumina bed	2	Dia 3.0 X Ht. 1.35
9.	Guard Pond – I	1	110 M3
10.	Guard Pond – II	1	200 M3
11.	Filter Press	1	36" X 36" 51 plates
12.	Softener	1	8x4x2.5 m
13.	Clarifier	1	5m x2.5m
	<b><u>Synthetic organic chemicals</u></b>		
14.	Screen Chamber	1	1x 1 x1 m
15.	Collection tank	1	5x5x5 m
16.	Neutralization tank	1	6.2X5X2.8 m
17.	Flash Mixer	1	0.7x0.7x1 m
18.	Dosing tanks for Alum and Lime	2	500 Litres each
19.	Parallel Plate separator	2	1.8x1x3.5 each
20.	Clarified water tank	1	10 m3
21.	Dual media filter	1	0.8 m dia x1.60 m
22.	Filter water tank	1	10m3
23.	Sludge drying beds	3	4x4x4 m each
24.	Multiple effect evaporator consisting of Agitated Thin film dryer	1	Stripper Column-1, Triple Effect Evaporator-1 and Vertical Thin film dryer-1
25.	Condensate tank	1	6.8x3.8x1.7 m

## 7. M/s. Asian Paints Limited, Penta Division

S.No	Name of the Treatment Unit	No. of Units	Dimension
1	Equalization tank	1	2.5*2.5*2.5
2	Settling tank	1	2.5*3.5
3	Reaction tank	1	5.5*2.5
4	Aeration Tank	1	34*16.5*3
5	Clarifier	1	5*5*3
6	Guard pond	1	15*5*3
7	Primary Clarifier	1	5.5*3
8	Treated effluent collection tank	1	3*3*1.2
9	Guard pond	1	15*5*3
10	WTP/ CT effluent collection tank	1	7 Dia *3
11	Buffer Tank	1	10 dia *3
12	Secondary Clarifier	1	5.5 Dai *3
13	Lamela filter	2	10 KL
14	Sludge dryind bed	7	10*7*.15
15	MEE Feed tank	1	10 KL
16	Clear water tank	1	10 kL
17	Multimedia filter	2	1 cum
18	Ultra filtration membrane	2	Available (5.5 KLD +2 KLD)
19	UF permeate tank	2	10 cum
20	RO plant	1	5 KLD
21	Permeate tank	1	10 cum
22	Buffer tank	1	10.5*3
23	RO Clarifier Feed tank	1	16 KL
24	Clarifier for RO2	1	3.5 Dia *3.6
25	MEE	1	6 KLD
26	RO I Stage	1	7.5 KL
27	RO2	1	8 KL
28	RO2 reject tank	1	16 KL
29	ATFD	1	41 KGPH

## 8. M/s. DFE Pharma India Private Limited

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Equalization tank	1	9.5 x 2.5 x 1.7
2.	Flash Mixer	1	1 x 1 x 1
3.	Primary Clariflocclator	1	2.6 dia X 3.5 swd
4.	Aeration tank	1	5.5 x 9 x 6.2
5.	Sludge Holding tank	1	1.6 x 1 x 2.8
6.	Filter Press	1	1 m <sup>3</sup> /hr
7.	Activated Carbon Filter	1	0.8 dia x 1.5
8.	RO-I Feed tank	1	30 KL
9.	RO-I Stage	1	150 KLD
10.	RO-II Stage	1	46 KLD
11.	RO-II Reject tank	1	5 KL
12.	HRSCC (High rate Solid contact Clarifier)	1	1.2 dia x 3.5
13.	Pressure Sand Filter (PSF)	1	0.35 dia X 1.5
14.	RO-III Stage	1	18 KLD
15.	RO-III Reject tank	1	10 KL
16.	RO Permeate tank	1	10 KL
17.	Solar Evaporation pan	4	10 x 5 x 0.3
18.	Additional MBR Tank	1	3x2x4
19.	MEE	1	12 KLD
20.	ATFD	1	9.6 KLD

## 9. M/s. Loyal Super Fabrics

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Effluent collection tank-I	1	10.6 X 10.3 X 2.2 (CD) &1(SD)
2.	Effluent collection tank -II	1	4.30dia X 6.2 LD
3.	Equalisation tank	1	10.8 X 4.93 X 2.5CD & 1.35SD
4.	Cascade Reactor Module	1	0.3 x 0.28 x 1.85m Each
5.	Air Diffusion Tank-I	1	Dia 7.6 x 7.3
6.	Air Diffusion Tank-II	1	Dia 7.6 x 7.3
7.	Primary Clarifier	1	Dia 7.6 x 7.3

8.	Bio Tower Feed Tank	1	9.53 X 4.4 X 2.2
9.	Bio Tower A1( Stage-I)	1	4.7 X 4.7 X 7.6MD
10.	Bio Tower B1(Stage-I)	1	4.67 X 4.75 X 5.3MD
11.	Bio Tower A2( Stage-II)	1	3.5 X 3.57 X 7.6MD
12.	Bio Tower B2( Stage-II)	1	3.42 X 3.48 X 5.3MD
13.	Biological Aeration Tank	1	9.23 x 6.87Dia
14.	Secondary Clarifier - I	1	7.9dia X 3LD
15.	Secondary Clarifier - II	1	5.5 X 3.70
16.	Treated Effluent Tank	1	5.0 X 3.44 X 2(TD)
17.	Dual Media Filter	1	2.5 X 1.5HOS
18.	Sludge Thickener feed Tank	1	1.5 X 1.1
19.	Sludge Thickener Tank	1	4.5 X 4.5 X 2.5
20.	Filter Press	2	
21.	Sludge Drying Bed	1	4.75 X 4.82 X 0.65
22.	Hopper Tank (Settling Tank)	1	4.07 X 4.07 X 4.5LD
23.	Ro Pressure Sand Filter	1	2.5 X 1.5HOS
24.	RO Membrane	48	

#### 10. M/s. Vivin Tex

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Screen Chamber	1	3X1.0X0.6
2.	Collection Tank	1	6X4.0X(2.0+1.5)
3.	Equalisation Tank	1	12.5X11.0X(4.2+0.5)
4.	Anaerobic Digester	1	12.0X9.0X(6.0+0.75)
5.	Aeration Tank	1	12.5X14.5X(4.2+0.5)
6.	Clarifier – Biological Treatment	1	7.5diaX(4.0+0.3)
7.	Clarifier – Chemical Treatment	1	7.0diaX(4.0+0.3)
8.	Treated effluent Tank 1	1	4.25X3.2X(3.5+1.0)
9.	Treated effluent 2	1	4.25X3.2X(4.0+0.5)
10.	Treated Effluent Tank 3	1	8.8X8.75X(4.0+0.5)
11.	Sludge Holding Tank	1	5.0X3.0X(2.5+0.5)
12.	Guard Pond	1	17.5X5.5X(4.0+0.5)
13.	Filter Press	1	20 No.s – 800mmX800mm
14.	Sludge Drying Bed	4	3.09X4.645X1.0
15.	Chemical Mixing and Flocculator	1	2 KL Capacity



16.	Pressure Sand Filter	1	1.2diaX2.0
17.	Activated Carbon Filter	1	1.2diaX3.0

#### 11. M/s. R.K.Exports (Karur) Pvt. Ltd

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Collection Tank-1	01	3.9 x 12 x 0.85
2.	Collection Tank-2	01	8.15 x 12.2 x 4.5
3.	Collection Tank-3	01	12.2 x 7.8 x 4.5
4.	Aeration Tank 1	01	16.3 x 10 x 4
5.	Aeration Tank 2	01	16.3 x 10 x 4
6.	Secondary clarifier	01	7.0 dia x 2.5
7.	Secondary Treated Water Tank	01	4.7 x 6.7 x 3.4
8.	Flash mixture Tank	01	1.2 x 1.2 x 1.25
9.	Flash mixture Tank	01	1.6 x 1.6 x 1.25
10.	Tertiary Clarifier	01	7.0 dia x 2.5
11.	Tertiary Treated Water Tank	01	4.7 x 5.3 x 3.95
12.	Guard water Tank	02	8 x 7.65 x 4.25
13.	Sludge Thickner Tank	01	5.5 dia x 2.5
14.	Multi Grade Filter	01	1.4 dia x 2.3
15.	Activated Carbon Filter	01	1.4 dia x 2.3
16.	Filter Press	01	35 plates – 0.8 x 0.8
17.	Sludge Drying Beds	10	5.5 x 5.5 x 1.4

**12. M/s. THANGAMMAN TEXTILE PVT LTD**

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Collection tank	2	10x7.5x4+0.3m
2.	Anaerobic digester	1	Dia 11.5x6+0.3m
3.	Primary clarifier	1	9m diaX2.8+0.3m Ht
4.	Aeration tank	1	18X12.5X4+0.3m
5.	Secondary clarifier	1	9m diaX2.8+0.3m Ht
6.	Clarified effluent tank	1	10x5x4+0.3
7.	Flash mixer	1	1.5mX1.5mX1m+0.23
8.	Tertiary clarifier	1	9m diaX2.8+0.3m Ht
9.	Pressure sand filter	1	2m diax2mHt
10.	Activated carbon filter	1	2m diax2mHt
11.	Sludge thickener	1	4mdiax3+0.3mHt
12.	Ro	Single stage RO	

**13. M/s. Supreme Dyechem Pvt Ltd**

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Oil and Greece	1	1 Mtrs X 1 Mtrs X 1 Mtrs
2.	Collection Sump	1	60000 Ltrs RCC Rubber Lined and Brick lined
3.	Filter Press	1	36' X 36' X 45 Plates for color removal
4.	Neutralizer	3	35000 Ltrs
5.	Filter Press	1	36' X 36' X 45 Plates for Final Treated Water Filtration
6.	Filter Press	2	48' X 48' X 75 Plates for Gypsum

7.	Filter Press	1	36' X 36' X 49 Plates for Gypsum
8.	Aerator	1	50000 Ltrs
9.	Secondary Clarifier	1	40000 Ltrs
10.	Sand filter and carbon Filter	1	10000 Ltrs

#### 14. M/s. Arkema Peroxides India Pvt Ltd

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Neutralization Tank	1	2.7*2.25*2 (In Mtrs)
2.	Equalization Tank	1	250 Cu.M
3.	Anaerobic Tank	1	22.5*7*4.5 (In Mtrs)
4.	Diffused Aeration tank	1	23.75*5*3 (In Mtrs)
5.	Clarifier	1	5.7 diaX4.62 (In Mtr
6.	Treated Effluent Collection tank	1	2 dia X 2 (In Mtrs)
7.	Sludge drying Bed	5	7.7X4.1X1.5
8.	Intermediate Anaerobic tank	1	15 X 10 X 3.5
9.	Collection sump	2	2.75*2.75*2 (In Mtr)
10.	Pressure Sand Filter	1	1.2 diaX 3 (In Mtrs)
11.	Carbon Filter	1	1.2 dia X 3 (In Mtrs)
12.	Holding tank ( Aerobic & Anaerobic)	2	17X7.5X2(In Mtrs)
13.	Dump pit ( Sulphate treatment tank)	1	250 Cu.m

#### 15. M/s. Pioneer Jellice India P. Limited

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Bone washing effluent Collection Tank	1	5 x 5 x 1.6
2.	Bone Washing Pre-treatment Clarifier	1	7.5 dia x 2
3.	Bone Washing pH Correction Sump	2	5 x 6 x 2
4.	Bone Washing Flash Mixer	2	2 dia x 1.6
5.	Bone Washing Primary Clarifier	1	9 dia x 4
6.	Bone Washing Filter Press	3	0.8 x 0.8 x 80

			Plates
7.	Ossein Plant, Collection Tank for Pre-treatment	4	5 x 7 x 2 each
8.	Gelatine Plant effluent Collection Pit	1	2 x 2 x 1.5
9.	Gelatine effluent Storage Tank for pretreatment	2	7.5 x 7.5 x 1.8
10.	Ossein & Gelatine Effluent Collection Tank	1	30 x 15 x 2.4
11.	Ossein Plant Primary Clarifier	3	7.0 dia x 3
12.	Ossein Plant Filter Press	1	0.8 x 0.8 x 80 Plates
13.	Screw Press for Gelatine Waste	1	0.83 m $\phi$ x 5.03 m
14.	Equalisation Tank	1	20 x 10 x 6
15.	Buffer Tank	1	10 x 10 x 6
16.	UASBR	1	14.0 x 20.0 x 7
17.	Biodigester	1	18m $\phi$ x 13m ht
18.	Gas Holder for UASBR	1	51 KL
19.	De-Nitrification Tanks	3	10 x 10 x 6
20.	Aeration Tank	2	30 x 10 x 6 each
21.	Secondary Clarifier	1	18 dia x 3
22.	PSF 105 KLH	2	3 m $\phi$
23.	UF Feed Tank	1	10 x 6.6 x 6.3
24.	RO Feed Tank	1	10 x 6.6 x 6.3
25.	RO Permeate Collection Tank	2	10 x 6.6 x 6.3
26.	Sludge drying beds	2	7 x 7 x 1.5
27.	Decanter	2	10 KL/ Hr.
28.	UF 45 KLH	1	80 Membranes 8" dia x 40" each
29.	UF 65 KLH	2	Hollow Fibre Membranes
30.	RO 45 KLH	1	8" dia x 40" Membranes
31.	RO 60 KLH	2	8" dia x 40" cross flow Membranes
32.	DCP Plant effluent Collection Tank	1	5 x 5.5 x 2
33.	DCP effluent pre-treatment Clarifier	1	9.5 m $\phi$ x 2.5 m
34.	DCP Pre-treated effluent Collection Tank	2	7.5 x 7.5 x 1.8
35.	DCP Aeration Tanks	2	20 x 10 x 6 each

36.	DCP Secondary Clarifier	1	12 m $\phi$ x 3 m
37.	Screw Blowers	2	2250 Nm <sup>3</sup> / hr. each
38.	Nossels for Biospray	34	--
39.	Biospray Pump	2 Nos.	4 Ltrs / Hr., 1 Ltr. / Hr.
40.	Odour Chemical make up Tank - SS	1 No.	500 Ltrs.
41.	Odour Chemical make up Tank - FRP	1 No.	500 Ltrs.

#### 16. M/s. Chemplast Sanmar Limited

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Equalization tank	1	20 L x 20 W x 3.5 H
2.	Flash Mixer	1	2.2L x 2.2 W x 1.2 H
3.	High Rate Solid Clarifier	1	13.8 dia x4.5 H
4.	Sand Filter	2	3.3 dia x1.5 H
5.	Ultra filtration	2 system	40 Membranes in each system
6.	RO stage 1	2 system	96 Membranes in each system
7.	RO stage 2	2 System	24 Membranes in each system
8.	Multiple effect evaporator	1	Triple effect

#### 17. M/s. TATA Chemicals ltd

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Effluent receiver Tank	1	12.9*6.1*4.92 M
2.	Clarifier	1	5 M dia/4.5 M height
3.	Flocculent Dosing tank	1	3KI tank cap /200 L to 4500 L Dosing cap
4.	Caustic dosing tank	1	1 KI tank cap /0 L to 20 L/Hr Dosing cap
5.	Settling tank 1	1	12.9*6.1*4.92 M

6.	Settling tank 2	1	13.7*7.90*6.10 M
7.	Treated water storage tank	1	13.7*7.90*6.10 M

#### 18. M/s. PANDIAN CHEMICALS LIMITED

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Neutralisation tank	2	2.5 x 2.4 x 0.75
2.	Clarifier	1	1.6 dia x 1.75
3.	Sludge drying bed treat water	2	2.2 x 1.2 x 1.1
4.	Collection tank	2	3.5x 3.4 x 2.0

#### 19. M/s. Amcor Flexibles India Pvt Ltd

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	COLLECTION CUM EQUALIZATION SUMP	1	DIA X 3.0 DEPTH
2.	MGO PREPARATION TANK	1	1.20 DIA X 1.0 DEPTH
3.	PRECIPITATION TANK	1	1.50 DIA X 1.0 DEPTH
4.	CLEAR WATER SUMP	1	DIA X 3.00 DEPTH
5.	PRESSURE SAND FILTER	1	0.45 DIA X 2.15 DEPT
6.	PRESSURE ACTIVATED CARBON FILTER	1	0.30 DIA X 2.15 DEPT
7.	SLUDGE DRYING BED	3	1.50 X 1.00 X 1.50
8.	SETTLING TANK/PLATE SETTLERS	1	1.50 X 2.50 X 3.00
9.	MEMBRANE TECHNOLOGY USING REVERSE OSMOSIS	1	1000 LITERS / HR
10.	RO PERMEATE TANK	1	500 LITER SINTEX TAN
11.	RO FEED TANK	1	500 LITER SINTEX TAN

12.	MECHANICAL FILTER PRESS	1	1.2 X 0.560
13.	SOLAR EVAPORATOR	6	6 X 3.34 X 0.3

## 20. M/s. Covestro(India)Private Limited

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Effluent Collection Pit	1	0.75*2.0*4.0
2.	Effluent Collection Pit	1	4.0*3.25*2.0
3.	Pre Aeration Tank-1	2	3.0*2.79*1.49
4.	Aeration Tank-1	2	3.41*4.95*2.18
5.	Additional Tank	1	3.41*4.95*2.18
6.	Sludge Drying Bed	1	1.22*1.21*0.37
7.	Conical Tank-1	1	-
8.	Gravity Sand Filter	1	-
9.	RO feed tank	1	1.8*2.2
10.	R.O. Permeate water Tank	1	1.35*1.5
11.	R.O. Reject water Tank	1	1.12*1.15

## 21. M/s. Sudhakar Chemicals

S. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1.	Grit Removal Tank	1	0.75 x 0.75 x 1
2.	Grit Removal Tank	1	1.5 x 1.5 x 1.8
3.	Up Flow reactor	1	2.2x 2.2 x 3.5
4.	Aeration tank	1	3.3 x 2.3 x 2.2
5.	Sec Settling tank	1	2.2 x 1.1 x 2.2
6.	sand Filter	1	2 x 1.15 x 0.6
7.	sludge drying bed	2	2.5 x 1.05 x 0.6

**22. M/s. Panda Bio Proteins**

<b>S. No.</b>	<b>Name of the Treatment Unit</b>	<b>No. of Units</b>	<b>Dimensions in metres</b>
1.	Screen Chamber	1	0.7 x 0.7 x 0.9
2.	Collection Tank	1	5 x 5 x 2.5
3.	Flash Mixer	1	1.2 x 1.2 x 1.5
4.	Primary Settling Tank	1	1.5 x 2.5 x 2.5
5.	Aeration Tank	1	5 x 3.5 x 3
6.	Secondary Clarifier	1	1.5 x 1.5 x 2.5
7.	Sludge Drying Beds	8	4 x 2.5 x 1.2

**23. M/s. Golden Fish meal and fish oil Company**

<b>S. No.</b>	<b>Name of the Treatment Unit</b>	<b>No. of Units</b>	<b>Dimensions in metres</b>
1.	Screen Chamber	1	0.7x0.5x0.5
2.	Oil Trap	1	0.7x0.5x0.6
3.	Collection Tank	1	4.0x3.0x2.5
4.	Aeration Tank	1	4.2x3.0x3.5
5.	Secondary Settling Tank	1	3.0x2.0x2
6.	Sludge Drying Beds	5	2.0x1.0x1.0
7.	Filtrate Collection Sump	1	2.0x2.0x2.0
8.	Valve Pits	1	0.4x0.4x0.4
9.	Pressure sand filter	1	2.0x1.0
10.	Activated Carbon Filter	1	2.0x1.0
11.	Bio Filter	1	10.0x2.0 2.0x2.0
12.	Bio Filter	1	2.0x2.0x2.0



### Details of Trade Effluent and Sewage generation and their disposal

Sl. No	Name of the Industry M/s.	Effluent /Sewage	Quantity Reused in their process/ Zero Liquid Discharge. KLD
1.	Clariant Chemicals (India) Limited TAGROS Chemicals India (P)Ltd.	Trade Effluent	577 KLD Disposed into Sea thro own marine disposal system.
		Sewage	13 KLD - Gardening
2.	TAGROS Chemicals India (P)Ltd.	Trade Effluent	188.9 KLD - ZLD
		Sewage	19 KLD – M/s. CUSECS
3.	Solara Active Pharma Sciences Limited	Trade Effluent	90 KLD – Zero Liquid Discharge.
		Sewage	40 KLD - Gardening
4.	Kawman Pharma (A Division of K.P.Manish Global Ingredients Pvt Ltd)	Trade Effluent 1	28 KLD - ZLD
		Trade Effluent 2	17.5 KLD - CUSECS
		Sewage	6 KLD - Gardening
5.	CRIMSUN ORGANICS PRIVATE LIMITED	Trade Effluent	87 KLD - ZLD
		Sewage	18 KLD - Gardening
6.	TANFAC Industries Limited	Trade Effluent	178.75 KLD - CUSECS
		Sewage	21.78 KLD - Gardening
7.	Asian Paints Limited, Penta Division	Trade Effluent	60 KLD - ZLD
		Sewage	7 KLD - Gardening
8.	DFE Pharma India Private Limited	Trade Effluent	127 KLD - ZLD
		Sewage	7 KLD - Gardening
9.	LOYAL SUPER FABRICS	Trade Effluent	618 KLD - CUSECS
		Sewage	10 – Gardening

10.	Vivin Tex	Trade Effluent	186.8 KLD - CUSECS
		Sewage	4 – Gardening
11.	R.K.Exports (Karur) Pvt. Ltd	Trade Effluent	366 KLD - CUSECS
		Sewage	6 KLD - Gardening
12.	THANGAMMAN TEXTILE PVT LTD	Trade Effluent	750 KLD. 375 KLD – CUSECS, 375 KLD - ZLD
		Sewage	8 KLD - Gardening
13.	Supreme Dyechem Pvt Ltd	Trade Effluent	12 KLD - CUSECS
		Sewage	1 KLD - Gardening
14.	Arkema Peroxide India Pvt Ltd	Trade Effluent	80 KLD - CUSECS
		Sewage	5 KLD - CUSECS
15.	Pioneer Jellice India P. Limited	Trade Effluent	2500 KLD - CUSECS
		Sewage	7.15 KLD - Gardening
16.	Chemplast Sanmar Limited.	Trade Effluent	1773 KLD - ZLD
		Sewage	12 KLD - Gardening
17.	TATA Chemicals Ltd	Trade Effluent	960 KLD - CUSECS
		Sewage	5 KLD - Gardening
18.	PANDIAN CHEMICALS LIMITED	Trade Effluent	12 KLD - CUSECS
		Sewage	3 KLD - Gardening
19.	AMCOR FLEXIBLES INDIA PVT LTD	Trade Effluent	5 KLD - ZLD
		Sewage	5 KLD - Gardening
20.	Covestro(India)Private Limited	Trade Effluent	2.5 KLD - ZLD
		Sewage	2 KLD – Gardening

21.	Sudhakar Chemicals	Trade Effluent	4.15 KLD - CUSECS
		Sewage	1 KLD -Gardening
22.	Panda Bio Protein	Trade Effluent	10 KLD - CUSECS
		Sewage	3 KLD -Gardening
23.	Golden fish meal and fish oil company	Trade Effluent	25 KLD - ZLD
		Sewage	2 KLD -Gardening

**Photographs of ETP and APC Measures in industries of SIPCOT:**



**ETP Systems**



**RO Plant**



**Multiple Effect Evaporator**

### 3.4 Domestic Waste Water Generation and Disposal in CEPI Area

The sewage generated from the 23 industries in SIPCOT are treated in the individual sewage treatment systems installed in the respective industries and disposed for gardening purpose inside the premises or through the Common Marine disposal systems.

Sl. No	Name of the Industry M/s.	Source	Sewage KLD	Disposal
1	CLARIANT CHEMICALS(INDIA)LIMITED	Toilet & canteen	40.0	Gardening
2	TAGROS CHEMICALS INDIA (P)LTD	Toilet & canteen	19.0	CUSECS
3	SOLARA ACTIVE PHARMA SCIENCES LIMITED	Toilet & canteen	41.0	Gardening
4	KAWMAN PHARMA (A DIVISION OF K.P.MANISH GLOBAL INGREDIENTS PVT LTD)	Toilet & canteen	6.0	Gardening
5	CRIMSUN ORGANICS PRIVATE	Toilet & canteen	18.0	Gardening

	LIM			
6	TANFAC INDUSTRIES LIMITED	Toilet & canteen	35.25	Gardening
7	ASIAN PAINTS LIMITED, PENTA DIVISION	Toilet & canteen	8.0	Gardening
8	DFE PHARMA INDIA PRIVATE LIMITED	Toilet & canteen	10.0	Gardening
9	LOYAL SUPER FABRICS	Toilet & canteen	10.0	Gardening
10	VIVIN TEX	Toilet & canteen	4.0	Gardening
11	R.K.EXPORTS (KARUR) PVT. LTD	Toilet & canteen	6.0	Gardening
12	THANGAMMAN TEXTILE PVT LTD	Toilet & canteen	8.0	Gardening
13	SUPREME DYECHEM PVT LTD	Toilet & canteen	2.0	Gardening
14	ARKEMA PEROXIDES INDIA PRIVATE LTD	Toilet & canteen	5.0	Gardening
15	PIONEER JELLICE INDIA P. LIMITED	Toilet & canteen	7.15	Gardening
16	CHEMPLAST SANMAR LIMITED (PVC PLANT)	Toilet & canteen	12.0	Gardening
17	TATA CHEMICALS LTD	Toilet & canteen	5.0	Gardening
18	PANDIAN CHEMICALS LIMITED	Toilet & canteen	3.0	Gardening
19	AMCOR FLEXIBLES INDIA PVT LTD	Toilet & canteen	5.0	Gardening
20	COVESTRO (INDIA) PRIVATE LIMITED	Toilet & canteen	2.0	Gardening
21	Sudhakar Chemicals	Toilet & canteen	1	Gardening
22	Panda Bio Protein	Toilet & canteen	3	Gardening
23	Golden fish meal and fish oil company	Toilet & canteen	2	Gardening

The villages Pachayankuppam, kudikadu, Eachangadu, Sangolikuppam are located within the CEPI Area. There are no Sewage Treatment Plant in these villages for the treatment of domestic waste water. The sewage generated from these villages are disposed in drains and reaches Uppanar River.



### 3.5 Industrial and Domestic Waste Water impact on Surface Water bodies

The Industries in SIPCOT industrial Complex are either discharging their Treated Trade Effluents in to the sea through the Common Marine Disposal System (M/s. CUSECS Ltd) or reusing their treated effluents after the treatment and achieving Zero Liquid Discharge. There is no discharge of Effluent into the land or surface water sources.

### 3.6 Common Treatment Facilities details

In SIPCOT Industrial Complex all the industries are having their own Effluent Treatment Plant for the treatment of trade effluent generated from the unit and hence there is no Common Treatment facility in SIPCOT Industrial Complex, Cuddalore.

### 3.7 Status of Surface Water Quality in 2018 in CEPI Area

For the calculation of CEPI 2018, the water samples from the Uppanar River have been collected and the CEPI score was calculated. This Uppanar River contains the backwater from sea which enters through the Uppanar mouth during every day tidal variations. This water is not used for any domestic or irrigation purposes by the public due to its natural salinity.

The Uppanar river passing adjacent to SIPCOT Complex was considered as a surface water source and the water samples were collected from Uppanar river to calculate this CEPI score.

Hence additional four locations were identified for the collection of samples from the surface water sources which is listed below.

Sampling	Additional Surface Source
Point-1	Sedapalyam Eri
Point-2	Pullikuthi Vaikkal
Point-3	Pullikuthi Vaikal
Point-4	Perumal Eri

### 3.8 Status of Surface Water Quality during November /December, 2019

The additional Surface water sampling locations were identified in the western side of the SIPCOT Industrial Complex in the core and impact zones. The locations of the additional sampling locations are given below.

Sampling	Additional Surface Source	Location	Distance from SIPCOT boundary
Point-1	Sedapalyam Eri	11 <sup>0</sup> 40'19.73" N 79 <sup>0</sup> 43'48.98" E	1.88 Km

Point-2	Pullikuthi Vaikkal	11 <sup>0</sup> 40'0.28" N 79 <sup>0</sup> 43'26.10" E	2.3 Km
Point-3	Pullikuthi Vaikal	11 <sup>0</sup> 39'49.17" N 79 <sup>0</sup> 44'10.21" E	0.95 Km
Point-4	Perumal Eri	11 <sup>0</sup> 36'13.22" N 79 <sup>0</sup> 41'45.46"E	6.14 Km

Water samples were collected from the existing sampling locations in Uppanar River and also from the above additional sampling locations.

The report of Analysis of the above Surface water samples are enclosed in Annexure-A5.

### 3.9 Conclusion

The Surface water samples were collected for CEPI 2018, at different locations of the Uppanar river. Basically Uppanar river contains the backwaters from the sea due to tidal variations. The reference sample of sea water was collected at a distance of 500 meters from the mouth of Uppanar River in which the **TDS is 29186 mg/Lt** and the **total hardness is around 9000 mg/ Lt**. The entire Uppanar river will have the impact on the TDS and Total Hardness. The Concentration of TDS and Total hardness will vary based on the tidal fluctuations. During CEPI monitoring for Surface water the parameters selected are Total Hardness, TDS and Phenol. Since the Total Hardness and Phenol in the Uppanar River is saline water and could not be compared with IS 10500: 1991 Drinking water standards.

10 of the industries in SIPCOT are having ZLD system and 13 of the industries are disposing their treated effluents through marine outlet. So it clearly indicates that no trade effluent or sewage is discharged into the Inland Surface Water Bodies or on to the Land. Regarding Phenol there are no industries having the phenol contribution in the Effluent. The Concentration of Phenol in the Uppanar River (during CEPI Score 2018) may be due to the Dead plants or animals. Since the Uppanar River is not to be considered as a surface water body, additional four Surface water locations have been identified in the core and impact zones and the samples were collected.

The Report of Analysis of the Water samples collected in Uppanar and Additional Water Sources indicates that there is no Phenolic Compounds in the surface water **(Annexure –A5)**.

Based on the above results the CEPI score has been recalculated and found the CEPI score as 16.0.

X—X—X

## 4. LAND ENVIRONMENT

### 4.1 Primary and Secondary Pollutants considered for GWEPI

Phenol is considered as the Primary Pollutant, Iron (Fe) and Total Phosphates (TP) are considered as secondary Pollutants for the GWEPI calculation.

### 4.2 Ground Water Quality Sampling Locations

Sample Code	Name of the Sampling Locations	Latitude N	Longitude E
GW 1	Inside of Chemplast Industries	11° 38' 45.5"	79° 44' 26.3"
GW 2	Kudikadu Village – Overhead Tank	11° 41' 44.1"	79° 45' 36.1"
GW 3	Pachayamnkuppam Opp to J.K Pharma	11° 41' 44.9"	79° 45' 47.7"
GW 4	Inside of SIPCOT PROJECT office	11° 40' 24.7"	79° 44' 59.9"

### 4.3 Status of Ground Water at sampling locations in 2018:

For CEPI 2018 samples of the Ground water has been collected from the following locations.

Sample Code	Name of the Sampling Locations	Latitude N	Longitude E
GW 1	Inside of Chemplast Industries	11° 38' 45.5"	79° 44' 26.3"
GW 2	Kudikadu Village – Overhead Tank	11° 41' 44.1"	79° 45' 36.1"
GW 3	Pachayamnkuppam Opp to J.K Pharma	11° 41' 44.9"	79° 45' 47.7"
GW 4	Inside of SIPCOT PROJECT office	11° 40' 24.7"	79° 44' 59.9"

It was mentioned that the concentration of Iron in 6 samples out of the 12 samples collected were higher than the permissible concentration of Iron (Average Fe 0.56mg/Lt as against the permissible limit of 0.3 mg/Lt).



#### 4.4 Status of Ground Water Quality during February, 2019

Ground water of borewells located inside the CEPI area and in the core zone and Impact zone were collected and analysed. The point of collection and the parameters are listed as below.

Sl. No	Point of Collection	Parameters Analysed ( 26 Nos)
1.	At the house of C. Anbarasu, S/o. Chandra Sekar, 2.Chidambaram Main Road, Semmankuppam, Cuddalore	Color, Odour, Turbidity, pH @ 25°C Conductivity, Total Dissolved Solids @ 180°C, Chloride as Cl, Sulphate as SO <sub>4</sub> , Fluoride as F, Total Phosphate as PO <sub>4</sub> Total Residual Chlorine, Total Alkalinity as CaCO <sub>3</sub> , Phenolphthalein Alkalinity as CaCO <sub>3</sub> , Calcium as Ca, Magnesium as Mg Nitrite Nitrogen as NO <sub>2</sub> -N, Nitrate Nitrogen as NO <sub>3</sub> -N, Free Ammonia as NH <sub>3</sub> , Copper as Cu, Zinc as Zn Lead as Pb, Total Chromium as Cr Cadmium as Cd, Nickel as Ni, Iron as Fe Sulfide as S
2.	At the house of N. Sankar, S/o. Narayanan, Poondiyankuppam.	
3.	At the house of Kandan, S/o. Rathinasamy, 116.Sangolikuppam	
4.	Back Side of SIPCOT Project office	
5.	M/s.Kudikadu Over head Tank (Borewell)	
6.	M/s. Clariant Chemicals Ltd., Bore well –Near Intermediate Plant	
7.	At Mr.Devan House, Beach Castle Road, KTR Nagar, Cuddalore	
8.	At Mr.Ramesh House, EB Colony Chellankuppam,Cuddalore	
9.	Public hand pump/Bore well, Pachiyankuppam at Mr.Murugnandam, House (Near Muncipal Dump Yard), VKJ Nagar, Cuddalore.	

The report of Analysis of the above ground water samples 26 parameters are enclosed in **Annexure – A5**.

Out of the above nine ground water samples collected in and around SIPCOT Industrial Complex the following can be inferred.

1. The levels of TDS and Chlorides in four number of samples are above the level of 500 mg/ Lt and 250 mg/ Lt when compared with the Drinking water standards IS 10500:1991. The other five samples shows that the level of TDS and chlorides are within the Acceptable Limit.
2. All the other parameters are within the acceptable limits of Drinking water standards in all the samples.

#### 4.5 Management of Hazardous Waste in CEPI Area

All Industries in SIPCOT has been issued with Authorisation under Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. The wastes generated from the units are disposed to secured landfill TSDF at Gummidipoondi / Authorised Recyclers/ Cement industries for Co processing.

All the industries are storing their Hazardous waste in secluded place, in their premises in earmarked Shed, Concrete Flooring with bund wall, Leachate Trench and sump.

The details of the individual industries regarding Hazardous Waste and their disposal methods for 2017 – 2019 are presented below;

#### Hazardous Waste Generation and Disposal Methods industry wise 2017-19

##### 1. M/s. Clariant Chemicals (India) Limited (2017 – 2018):

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used/Spent Oil	3.5	0	Recycling to Authorized Recyclers
Empty Barrels /Lines contaminated with hazardous chemicals/wastes	22	11.45	Recycling to Authorized Recyclers
Gypsum sludge	4500	1462.10	Used in cement factories

(2018 – 2019):

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used/Spent Oil	3.5	0	Recycling to Authorized Recyclers
Empty Barrels /Lines contaminated with hazardous chemicals/wastes	22	14.50	Recycling to Authorized Recyclers
Gypsum sludge	4500	2960.0	Used in cement factories

**2. M/s. TAGROS Chemicals India (P) Ltd :**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used Oil	1000Lit,	0.66	Recycling to Authorized Recyclers
ETP Sludge	16.0	2.63	TSDF Gummudipoondi
MEE Solids		12.80	TSDF Gummudipoondi
Distillation Residue	26.592	26.24	TSDF Gummudipoondi/ GEPIL
Process Waste/Residue	450	222.43	TSDF Gummudipoondi/ GEPIL
Discarded Containers/Liners	45	34.04	Recycling to Authorized Recyclers

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	1.32KI	0.09	Recycling to Authorized Recyclers
ETP Sludge	5397	1.74	TSDF Gummudipoondi
MEE Solids		1345.047	TSDF Gummudipoondi
Distillation Residue	40	28.51	TSDF Gummudipoondi/ GEPIL
Process Waste/Residue	675	169.256	TSDF Gummudipoondi/ GEPIL
Discarded Containers/Liners	72	41.007	Recycling to Authorized Recyclers

### 3. M/s. Solara Active Pharma Sciences Limited:

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Chemical Sludge from Waste Water treatment (Ton)	2068	1861.508	<b>Secured Land fill:</b> TSDF- TNWML, Gummudipoondi
Spent Carbon (Ton)	36	29.513	<b>Co-Processing:</b> GEPIL Ranipet / Cement industry
Process Residue & Wastes (KL)	300	88.45	<b>Co-Processing:</b> GEPIL Ranipet / Cement industry
Used or Spent Oil (KL)	60	6.9	Disposed through <b>Authorised recyclers</b>
Wastes or residues containing oil (Ton)	12	0	<b>Co-Processing:</b> GEPIL Ranipet
Discarded	2000	780	Disposed through

containers / Barrels/lines used for hazardous waste chemicals (Nos)			<b>Authorised recyclers</b>
Spent Organic Solvent (kL)	13000	3440.017	Disposed through <b>Authorised recyclers</b>
Spent carbon or Filter medium (Ton)	12	0.36	<b>Co-Processing:</b> GEPIL Ranipet
Chemical containing residue arising from decontamination (kL)	160	59.865	Treated in ETP
Off-Specification products (Ton)	10	2.0	<b>Co-Processing:</b> GEPIL Ranipet / Cement industry

<b>Name</b>	<b>Authorized Quantity MT/Annum</b>	<b>Waste Generation Tons/year 2018-19</b>	<b>Treatment &amp; disposal mechanism</b>
Chemical Sludge from Waste Water treatment (Ton)	2068	1912.134	<b>Secured Land fill:</b> TSDF-TNWML, Gummidipoondi
Spent Carbon (Ton)	36	35.875	<b>Co-Processing:</b> GEPIL Ranipet / Cement industry
Process Residue & Wastes (KL)	300	263.93	<b>Co-Processing:</b> GEPIL Ranipet / Cement industry
Used or Spent Oil (KL)	60	0.855	Disposed through <b>Authorised recyclers</b>
Wastes or residues containing oil (Ton)	12	0.1	<b>Co-Processing:</b> GEPIL Ranipet
Discarded containers / Barrels/lines used for hazardous waste chemicals (Nos)	2000	320	Disposed through <b>Authorised recyclers</b>
Spent Organic	13000	3279.904	Disposed through

Solvent (kL)			<b>Authorised recyclers</b>
Spent carbon or Filter medium (Ton)	12	0.175	<b>Co-Processing:</b> GEPIL Ranipet
Chemical containing residue arising from decontamination (kL)	160	26.96	Treated in ETP
Off-Specification products (Ton)	10	9.76	<b>Co-Processing:</b> GEPIL Ranipet / Cement industry

**4. M/s. Kawman Pharma (A Division of K.P.Manish Global Ingredients Pvt Ltd):**

<b>Name</b>	<b>Authorized Quantity MT/Annum</b>	<b>Waste Generation Tons/year 2017-18</b>	<b>Treatment &amp; disposal mechanism</b>
Spent carbon	5.0	4.65 MT	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
Waste Oil	1.0	0.49 MT	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
ETP Sludge	300	5.3 MT	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
Process or Distillation Residue	30	4.0MT	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
Residue and waste	24	Nil	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board

Spent solvents	40	Nil	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
Empty barrels/containers / liner	7.0	Nil	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board

<b>Name</b>	<b>Authorized Quantity MT/Annum</b>	<b>Waste Generation Tons/year 2018-19</b>	<b>Treatment &amp; disposal mechanism</b>
Spent carbon	5.0	3.14	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
Waste Oil	1.0	0.05	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
ETP Sludge	300	3.38	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
Process or Distillation Residue	30	Nil	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
Residue and waste	24	Nil	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
Spent solvents	40	Nil	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board
Empty barrels / containers / liner	7.0	3.18	Sent to the Storage Yard and then dispose to Parties registered with MoEFCC and SPC Board

**5. M/s. TANFAC Industries Limited ( ALF 3,HFO & SOC):**

<b>Name</b>	<b>Authorized Quantity MT/Annum</b>	<b>Waste Generation Tons/year 2017-18</b>	<b>Treatment &amp; disposal mechanism</b>
Used Oil	22.5	1.54	Disposed to authorized recycler
Waste Oil	19	5.03	Disposed to authorized recycler
ETP Sludge	2390	1058	ACC Cements Coimbatore , Ultratech Cements Ariyalur,
Sulphur Sludge	250	37.15	To sent TSDF ,Gummidipoondi.
Spent Catalyst	2.0	0.150	To sent TSDF ,Gummidipoondi
Discarded empty Barrel	90	8.8	Disposing to Authorized parties
Spent Carbon	1.5	Nil	To sent TSDF ,Gummidipoondi
Distillation Residue	90	2.73	To sent TSDF ,Gummidipoondi

<b>Name</b>	<b>Authorized Quantity MT/Annum</b>	<b>Waste Generation Tons/year 2018-19</b>	<b>Treatment &amp; disposal mechanism</b>
Used Oil	22.5	0.345	Disposed to authorized recycler
Waste Oil	19	16.66	Disposed to authorized recycler
ETP Sludge	2390	908	ACC Cements Coimbatore , Ultratech Cements Ariyalur,
Sulphur Sludge	250	48	To sent TSDF ,Gummidipoondi.
Spent Catalyst	2.0	0.35	To sent TSDF ,Gummidipoondi
Discarded empty Barrel	90	11.53	Disposing to Authorized parties
Spent Carbon	1.5	Nil	To sent TSDF



			,Gummidipoondi
Distillation Residue	90	Nil	To sent TSDF ,Gummidipoondi

**6. M/s. Asian paints Limited:**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used Oil	0.900	0.885	Authorized waste recyclers
Waste Oil	0.300	0.110	Authorized waste recyclers
ETP Sludge	172	124.565	Disposed to TNWML

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	0.900	0.840	Authorized waste recyclers
Waste Oil	0.300	0.210	Authorized waste recyclers
ETP Sludge	172	156.730	Disposed to TNWML

**7. M/s. DFE Pharma india private Limited:**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used Oil	0.480	0.0	Generation, Collection, Storage, Transportation. Disposal to Authorized recyclers
ETP Sludge	80.0	57.203	Generation, Collection, Storage, Transportation. Disposal to common Landfill – TSDF, Gummidipoondi

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	0.480	0.0	Generation, Collection, Storage, Transportation. Disposal to Authorized recyclers
ETP Sludge	80.0	71.340	Generation, Collection, Storage, Transportation. Disposal to common Landfill – TSDF, Gummidipoondi

**8. M/s. Loyal Super Fabrics:**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
ETP Sludge	129 MT/Annum	57.48	Co processing in Cement Industry

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
ETP Sludge	129 MT/Annum	120	Co processing in Cement Industry

**9. M/s. VivinTex:**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used Oil	---	---	---
Waste Oil	0.05	0.009	Used in boiler as fuel
ETP Sludge	193.200	80.817	Sent to cement factory for Co-processing

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	---	---	---
Waste Oil	0.05	0.009	Used in boiler as fuel
ETP Sludge	193.200	88.665	Sent to cement factory for Co-processing

**9. M/s. R.K.Exports (Karur) Pvt. Ltd,**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used Oil	0.5 T/Annum	0.20	Disposed into own Boiler for captive consumption
Waste Oil	0.25 T/Annum	0.10	Disposed into own Boiler for captive consumption
ETP Sludge	90.0 T/Annum	89.95	TNPCB Authorized Cement Plants of Co-Processing in Cement Kiln.

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	0.5 T/Annum	0.15	Disposed into own Boiler for captive consumption
Waste Oil	0.25 T/Annum	0.12	Disposed into own Boiler for captive consumption
ETP Sludge	90.0 T/Annum	89.10	TNPCB Authorized Cement Plants of Co-Processing in Cement Kiln.

**10.M/s. Thangamman Textiles,**

<b>Name</b>	<b>Authorized Quantity MT/Annum</b>	<b>Waste Generation Tons/year 2017-18</b>	<b>Treatment &amp; disposal mechanism</b>
ETP Sludge	96 T/Y	55.75	Chemical and biological treatment method , Co processing for M/S ultratech cement limited,Ariyalur

<b>Name</b>	<b>Authorized Quantity MT/Annum</b>	<b>Waste Generation Tons/year 2018-19</b>	<b>Treatment &amp; disposal mechanism</b>
ETP Sludge	96 T/Y	46.55	Chemical and biological treatment method , Co processing for M/S ultratech cement limited,Ariyalur

**11.M/s. Supreme Dye Chemicals.**

<b>Name</b>	<b>Authorized Quantity MT/Annum</b>	<b>Waste Generation Tons/year 2017-18</b>	<b>Treatment &amp; disposal mechanism</b>
Used Oil	0.01 MT	NIL	SAIZROL INDUSTRIES (RECYCLER)
ETP Sludge	150 MT	25MT	TAMILNADU WASTE MANAGEMENT LTD

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	0.01 MT	NIL	SAIZROL INDUSTRIES (RECYCLER)
ETP Sludge	150 MT	25MT	TAMILNADU WASTE MANAGEMENT LTD

**12.M/s. Arkema Peroxides India Private Limited.**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used Oil	3.2	0.8736	Collection , Storage disposed to Authorized recyclers
ETP Sludge	20	10.415	Disposed to TSDF , Gumidipoondi

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	3.2	1.108	Collection , Storage disposed to Authorized recyclers
ETP Sludge	20	10.405	Disposed to TSDF , Gumidipoondi

**12. M/s. Pioneer Jellice India P. Limited.**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used Oil	4.5	0.300	Collection , Storage disposed to Authorized recyclers

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	4.5	1.485	Collection , Storage disposed to Authorized recyclers

**13. M/s. Chemplast Sanmar Limited.**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used/ Spent Oil	16.2	1.390	To authorized Recycler
ETP Sludge	80	79.740	TSDf Gummidipoondi
Evaporator solids	1656	94.940	TSDf Gummidipoondi
Desalination sludge	720	531.900	TSDf Gummidipoondi
PVC Lumps	10.8	0.000	TSDf Gummidipoondi

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used/ Spent Oil	16.2	2.691	To authorized Recycler
ETP Sludge	80	79.890	TSDf Gummidipoondi

Evaporator solids	1656	105.43	TSDF Gummidipoondi
Desalination sludge	720	436.04	TSDF Gummidipoondi
PVC Lumps	10.8	0.000	TSDF Gummidipoondi

**13. M/s. TATA Chemicals Limited,**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used Oil	0.6T/Annum	0	Dispose to authorized recycler
Cotton and other waste	0.12T/Annum	0	TNWML gummidipoondi
Carbon waste	2.0 T/Annum	0	TNWML gummidipoondi

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	2.0T/Annum	0	Dispose to authorized recycler
Cotton and other waste	0.3T/Annum	0	TNWML gummidipoondi
Carbon waste	2.0 T/Annum	0	TNWML gummidipoondi
ETP sludge waste	180 T/Annum	7.5 T/YTD	TNWML gummidipoondi

**14. M/s. PANDIAN CHEMICALS LIMITED-APC UNIT,**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
ETP Sludge	0.06	0.04	Through TNWML, Gummidipoondi, Chennai

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
ETP Sludge	0.06	0.06	Through TNWML, Gummidipoondi, Chennai

**15. M/s. AMCOR FLEXIBLES INDIA PVT LIMITED,**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Chemical Sludge from Waste water Treatment	5 T / Annum	3 Tons	Disposed to TNWML Gummudipoondi

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Chemical Sludge from Waste Water Treatment	5 T/ Annum	2.7 T	Disposed to TNWML Gumudipoondi
Spent Oil	0.250 T/ Annum	-	TNPCB authorized Recycler
Contaminated Cotton Rags	10 T/ Annum	3.8 T	Disposed to TNWML Gumudipoondi

**16. M/s. Covestro (India) Private Limited,**

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2017-18	Treatment & disposal mechanism
Used Oil	3.2 Tons	0.862	Recycle and send to authorized vendors



			of TNPCB.
ETP Sludge	1.0	0.21	Land fill and send to TSDF Gummidipoondi.

Name	Authorized Quantity MT/Annum	Waste Generation Tons/year 2018-19	Treatment & disposal mechanism
Used Oil	3.2	1.050	Recycle and send to authorized vendors of TNPCB.
ETP Sludge	1.0	0.789	Land fill and send to TSDF Gummidipoondi.

#### **Storage of hazardous & other wastes:**

The industries located within SIPCOT Industrial Complex are storing their hazardous & other wastes in a proper container in a closed dedicated shed. The units had also provided required facilities such as collection trench so as to prevent the leachates from the Hazardous waste shed in reaching the storm water drain.

All the Hazardous waste generated in the industries of SIPCOT are stored safely in earmarked and enclosed areas in respective industries and disposed periodically to the Authorised Recyclers, Cement Kilns for Co processing and to the TSDF Gummidipoondi, kancheepuram District as per the type of the Waste.

#### **4.6 Management of Bio-Medical Waste in CEPI Area**

There are no major Hospitals located within the SIPCOT industrial Complex Cuddalore. However, some of the units have their own Occupational health centres within the premises. The units have made an agreement with the CBMWTF and dispose their bio-medical waste to Common Biomedical Waste treatment facility. These health centre are issued with Authorisation under the Bio-Medical Waste Management Rules, 2016 as amended in 2018.

Sl. No	Name of the Industry
1.	M/s Solara Active Pharma Sciences Limited, Cuddalore.
2.	M/s. Chemplast Sanmar Limited
3.	Covestro (India ) Private Limited
4.	TANFAC Industries Ltd.

#### 4.7 Management of Municipal Solid Waste in CEPI Area

There are no Municipal Solid waste disposal facility in the CEPI Area.

#### 4.8 Details of STPs/ETPs/CETPs

There is no Sewage Treatment Plant in the surrounding habitations of CEPI Area. Some of the industries in CEPI area have installed Sewage Treatment Plant. The details of Effluent Treatment Plant in the CEPI area are elaborated in the column 3.3. There is no CETP in the CEPI Area.

#### 4.9 Conclusion.

As per the study report conducted during the period January 2018 the CEPI Score as per the revised guidelines of CPCB is calculated as Land - 41.25 and the status as Ln.

Based on the Report of Analysis of the nine ground water samples collected in and around SIPCOT Industrial Complex the following has been inferred. The levels of TDS and Chlorides in one number of sample is above the level of 2000 mg/ Lt and 1000 mg/ Lt when compared with the Drinking water standards IS 10500:1991. The other samples shows that the level of TDS and chlorides are within the Acceptable Limit. All the other parameters are within the acceptable limits of Drinking water standards. Based on the above results the CEPI score has been calculated for 2019 and found **CEPI score as 11.5 for Land Environment.**

X—X—X

## 5. Health Statistics

### 5.1 Hospitals in CEPI Area.

There is no Hospitals in CEPI Area. The industries are operating their Occupational Health Centres in the CEPI Area and it is furnished in column 4.6.

### 5.2 Health Data of five Years.

The health data of two major hospitals in Cuddalore is presented Annexure

### 5.3 Analysis of Data and Conclusion:

#### AIR BORNE

Type of Diseases	2016-2017	2017-2018	% Increase	Remarks
Asthma	0	1		
Acute Respiratory Infection	3	11		
Bronchitis	0	0		
Cancer	0	1		
<b>Total</b>	<b>3</b>	<b>13</b>	<b>-4.33 (&lt; 5%)</b>	<b>Decrease</b>

#### WATER BORNE

Type of Diseases	2016-2017	2017-2018	% Increase	Remark
Gastroenteritis	4	3		
Diarrhea	2	3		
Renal disease	2	3		
Cancer				
<b>TOTAL</b>	<b>8</b>	<b>9</b>	<b>-1.125 (&lt;5%)</b>	<b>Decrease</b>



There are no substantial increase in the number of patients who have been treated for major diseases in the last two years.



X—X—X




## 6. ACTION TAKEN DURING 2018-2019 & 2019-2020

### 6.1 Action Taken by the Industries in CEPI Area for the improvement of Pollution Control Measures




#### M/s. TAGROS CHEMICALS INDIA LIMITED

Sl. No	Action Plan	Compliance and Action Taken	Photographs
1.	Reduce VOC Emission	The unit have provided Common vent condensers for the storage tanks of the following solvents 1. Hexane 2. CTC 3. EDC 4. TEA 5. Acrylonitrile	VENT CONDENSER FOR UNDERGROUND STORAGE TANKS 
2.		Apart from storage tanks, we have also provided solvent recovery systems in various plant locations to recover solvents and to control air emissions Solvent RECOVERY SYSTE 1.Hexane-5 No 2.Carbon Tetra chloride (CTC)-1 No 3.Ethylene di chloride (EDC) Recovery System -1No 4.Toluene Recovery system-6 No 5.Isopropyl Alcohol Recovery System -3No 6.Triethyl Amine Recovery System 4 No 7.Evaporator Final Vent Condensate Recovery System 2 No 8.Ejector Vent Vapours Recovery-1 No	
3.		Hexane Recovery System 1. Plant-3 -R-217A Hexane-Hexane Recovery -By Vacuum-Secondary	VENT CONDENSER FOR ABOVE GROUND STORAGE TANK

		<p>Condenser provided.</p> <p>2. Plant-2 R-220A Hexane Hexane Recoveries By Vacuum-Secondary Condenser provided.</p> <p>3. Plant-4R-306B Hexane Hexane Recovery By Vacuum-Secondary Condenser provided.</p> <p>4. Plant-1, Tank Hexane- All Reactors / Tanks Vent Condenser Vent Condenser With Jacketed Tank &amp; Circulation Pump provided.</p> <p>5.Plant-5Tank Hexane All Reactors / Tanks Vent CondenserVent Condenser With Jacketed Tank &amp; Circulation Pump provided.</p>	
4.		<p>Carbon Tetra chloride (CTC) Recovery System T-506 Tank- CTC Tanks Vent Condenser provided and Acrylonitrile Recovery System provided.</p>	
5.		<p>T-505 Acrylonitrile Tanks Vent condenser Vent Condenser provided.</p>	
6.		<p>Ethylene di chloride (EDC) Recovery System</p> <p>1. Plants-5-R-103EDC Recovery By Vacuum-Tertiary Condenser provided.</p> <p>2, Plants-5 R-104 EDC Recovery- By Atm/Vacuum-Tertiary Condenser provided.</p> <p>3. Plants-5-R-109 EDC Recovery By Atm/Vacuum-Tertiary Condenser provided.</p> <p>4. Plants-5-R-110-EDC Recovery -By Atm/Vacuum-Tertiary Condenser provided.</p> <p>5. Plant-5All Reactors / Tanks Vent Condenser- Vent Condenser With Jacketed</p>	



		Tank & Circulation Pump provided.. 6 T-507-EDC Tanks Vent condensers-Vent condenser provided.	
7.		Toluene Recovery System 1.Plant-5 R-113-Toluene Recovery By -Atm/Vacuum-Secondary Condenser provided. 2.Plant-5 R-114 Toluene Recovery By- Atm/Vacuum Secondary Condenser provided. 3.Plant-5 Tank Toluene All Reactors /Tanks Vent Condenser Vent Condenser provided.	
8.		1. Plant-5 R-226 IPA Recoveries -By Atmosphere Secondary Condenser provided. 2. Plant-5 Tank All Reactors /- Tanks Vent Condenser Vent Condenser provided. 3. T-520 Tank IPA Tanks Vent condenser Vent Condenser provided.	
9.		Triethyl Amine Recovery System 1. Plant-3 All Reactors / Tanks Vent Condenser PFRP Tank With FRP Packed Column & Circulation Pump provided. 2.22 T-509 TEA Tanks Vent condenser Vent Condenser provided. Evaporator Final Vent Condensate Recovery System. 3.Evaporator Condensate Vapour- Evaporator Vacuum pump condensate Vapour outlet vent condenser & connect the evaporator	
10.		Ejector Vent Vapours	Mechanical Seal




		<p>Recovery  1.Utility-Ejectors  J1,2,3,4,5,9,10,11,12,13,14,15,16&amp;17 Ejector Vacuum Vapour outlet PPRP  Carbon Packed Column Provided.  2.Utility Water Ring  Vac.Pumps-WVP-103,105,  Alpha Jet, Delta Jet,Hexa  RVD Jet,P-3 Jet &amp; R110 Jet  Ejector Vacuum pump  Vapour outlet - PPRP  Carbon Packed Column  Provided.</p>	
11.		<p>HCL SCRUBBEINNG  SYSTEM PROVIDED IN  TANKFARM AREA</p>	<p>HCL SCRUBBER IN TANKFARM</p> 
12.		<p>SCRUBBER FOR PROVIDED  TC TANK AREA</p>	
13.		<p>Recovery Performance after  installation of VOC Recovery  Systems:  1.Hexane Recovery- Before  83.5% After 97.28%  2.TEA Recovery-Before  87.32%After 97.12%  3.Ethylene di chloride (EDC)  Recovery System- Before  84.28% After 97.35%  4.Toluene Recovery systems-</p>	

		Before 83.12% After 98.1% 5.IPA Recovery - Before 86.86% After 97.25%	
14.		Environmental Impact: After the installation of Solvent recovery system, the emission of solvent vapors has been reduced considerably which helps in reducing air pollution and also it has a huge impact in the health and safety of employees. The concentration of pollutants within the factory premises are found within the permissible limits.	

**M/s. Solara Active Pharma Sciences Limited**

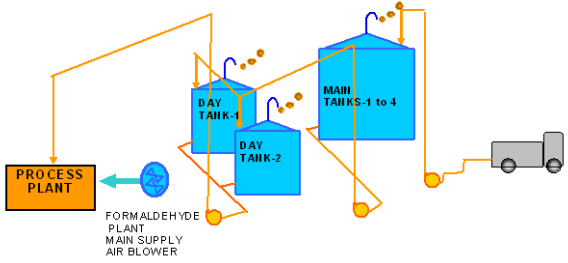
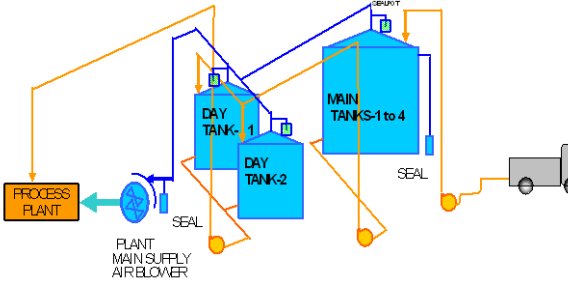
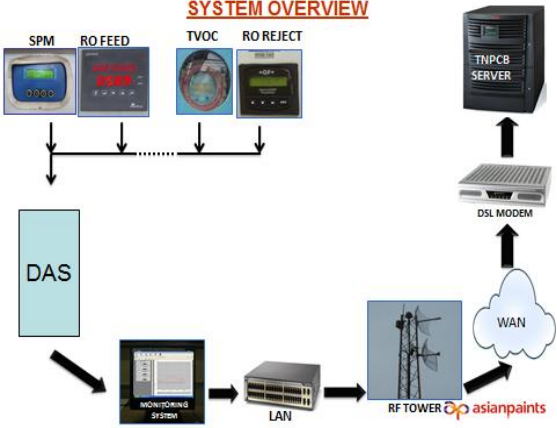
Sl. No	Action Plan	Compliance and Action Taken	Photographs
1.	Reduction of VOC emission Stabilization and Disposal of Solid waste	Odour and VOC emission from sludge are controlled by stabilizing the solid waste within our premises by mixing with fly ash and lime in 1:1:0.15 ratio. Stabilized sludge is packed in new poly bag and stitched stored in weather proof shed. The stabilized sludge is disposed to TNWML for Secured Land Fill by means of dedicated vehicle.	 <p style="text-align: center;">Completed</p>
2.	Replacing of Bio filter with Multi stage activated carbon filter	Bio filter installed was not effective to control VOC emission as the microbes died due to the presence of mixture of solvents with varied concentration. We studied the system and installed Sub coolers at low temperatures to level of below – 5°C for condensing the un	







		condensed vapors to prevent the escape of solvent vapours outside, followed by the installation of Multi Stage Activated Carbon adsorption towers having primary ,secondary and tertiary carbon bed with standby facility	Completed
3.	Covering of Aeration Tanks	The odour from Aeration tanks is controlled by covering the tanks. The vapours from these tanks are sucked by means of Blower and adsorbed through Activated carbon bed. Presently we removed the Covering to replace the Membrane	 <p>Completed</p>
4.	Action taken for process modification by change of raw material	Trial were taken for replacing Chloroform with other solvents, like TCE, IPA, toluene, Ethyl Acetate, which did not yield the desired results and spec of product did not meet wherein the unit got new impurities, which are in un accepted levels. Hence the replacement is not working at the moment rather, they have effectively reduced the losses into the atmosphere, and there by the consumption efficiency has been improved with the help of modified distillation systems. The unit have made process modification in Ranitidine manufacturing process and thereby eliminating	Completed

		the generation of Mercaptan.	
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**M/s. Asian Paints Ltd, Penta Division**

Sl. No	Action Plan	Compliance and Action Taken	Photographs
1.	Elimination of point source emission.	Project completed by February 2009 and it is fully functional. The VOC values are getting maintained below 0.1 ppm. Complied	<p><b>SCHEMATICS OF METHANOL AND FORMALDEHYDE STORAGE TANKS BEFORE MODIFICATION</b></p>  <p><b>SCHEMATICS OF METHANOL AND FORMALDEHYDE STORAGE TANKS POST MODIFICATION</b></p> 
2.	Monitoring System of Pollution Control Board.	Project completed by July 2010 and it is fully functional. The Environmental parameters are continuously measured and uploaded to the Care Air System. Complied	<p><b>SYSTEM OVERVIEW</b></p> 

			<p><b>Field transmitters / online analyzers connected to the system (contd....)</b></p> <p>Effluent Discharge Parameters:</p> <ul style="list-style-type: none"> <li>&gt; Effluent generation flow meter.</li> <li>&gt; ZERO Discharge system performance related parameters: <ul style="list-style-type: none"> <li>• Permeate flow meter from the Reverse Osmosis System.</li> <li>• Water recovery from the Zero Discharge System.</li> </ul> </li> </ul>  <p style="text-align: right;"></p>
3.	Elimination of fugitive emission.	Project completed by July 2009 and it is fully functional. The VOC values are getting maintained below 0.1 ppm. Complied	<p><b>PROVISION OF RUPTURE DISC TO SAFETY VALVES</b></p>  <p style="text-align: right;"></p>

### M/s. DFE Pharma India LLP

Sl. No	Action Plan	Compliance and Action Taken
1.	Full Scale Physico Chemical treatment units, RO, MEE & Solar Evaporation Pan	The unit has installed Equalization tank, Flash Mixer, Primary Clariflocclator, Aeration tank, Sludge Holding tank, Filter Press, Activated Carbon Filter, RO-I Feed tank, Ro-I Stage, RO-II Stage, Ro-II Reject tank, HRSCC (High rate Solid contact Clarifier), Pressure Sand Filter (PSF), Ro-III Stage, RO-III Reject tank, RO Permeate tank, Solar Evaporation pan, Additional MBR Tank MEE, MBR, ATFD

2.		
	Source Emission	
3.	APC Measures – Cyclone separator and Stack	The unit has installed cyclone separator to boiler stack. The unit has installed online VOC analyser for

**M/s. Covestro(India) Private Limited**

Sl. No	Action Plan	Compliance and Action Taken
1.	<p>Waste Water:</p> <p>Adequacy report of existing ETP by Competent external agencies</p>	<p>It was informed that adequacy report of existing ETP and the performance of operation was evaluated by through external agency called Clean Bios Innovations, Chennai.</p>



	<p>Source Emission:</p> <p>Stack monitoring survey through</p>	<p>Air Pollution Control Measures are evaluated</p>
--	--	---

Competent external agencies for all stacks before and after Air pollution control (APC) measures and the report on the performance of APC measures shall be furnished.

by external competent agency,



Process stack



Stack attached to Thermopac



Stack attached to DG set

Remarks : The unit has installed all suggested measures, however the operation of pollution control measures required to be monitor regularly to ascertain the ZLD system as well as air pollution control devices to achieve the prescribed standards.



**M/s. CHEMPLAST SANMAR LIMITED PVC DIVISION**

Sl. No	Action Plan	Compliance and Action Taken
1.	<p>Waste Water:</p> <p>Full scale Physico Chemical treatment units, RO, MEE &amp; Nutch filter.</p> <p>Sensors –RO permeate EMFM &amp; pH of effluent, EMFM &amp; PH of sewage discharge line and Desalination plant reject discharge EMFM &amp; Ph into sea.</p>	<p>The units has installed Zero Liquid discharge plant (ZLD) comprising Physio Chemical treatment followed by RO, MEE and Nutch filter. The entire effluent generated is treated and recycled for process and utility utilization</p> <p>The unit has installed EMFM and Online pH meter for Sewage treatment plant output, ZLD RO plant output , Desalination reject to sea and the same is connected to TNPCB air care centre.</p>



Effluent Treatment plant



Ultra filtration and RO system



Multiple Effect Evaporator- MEE



Desalination Reject flow meter



ZLD RO output flow meter



STP output flow meter

<p>2.</p>	<p><b>Source Emission:</b></p> <p>Online SPM,SO2, NOx, &amp; VCM monitoring system.</p> <p>APC measures – Multi Cyclone followed by wet scrubber, bag filter, Reverse jet bag filter, Bin Vent filter, ESP &amp; Stack.</p>	<p>The unit has installed online SPM, SO2, NOX, CO &amp; CO2 in Boiler stack , VCM &amp; SPM monitoring system in dryer stack and VCM monitoring in Vent gas Absorption stack and all the installations are connected to TNPCB Care Air Centre.</p> <p>The unit is installed multi cyclone followed by wet scrubber, bag filter, Reverse jet bag filter and Bin vent filter in the process to control PVC dust emission ,VCM and other VOC's.</p> <p>ESP is installed in Boiler as APCD.</p>
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ESP and Stack of Boiler



Bag Filter



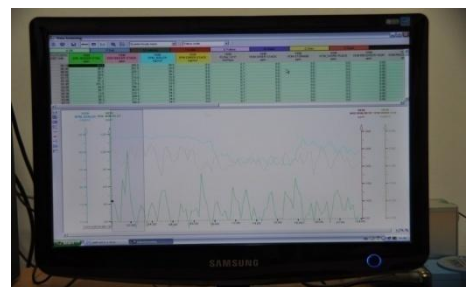
Multi cyclone and Venturi scrubber



Vent gas absorption system





Bin vent Filter



Care Air centre connectivity

Remarks : The unit has installed all suggested measures, however the operation of pollution control measures required to be monitor regularly to ascertain the ZLD system as well as air pollution control devices to achieve the prescribed standards.

**M/s. KAWMAN PHARMA (A Division of K.P.Manish Global Ingredients Pvt Ltd)**

Sl. No	Action Plan	Compliance and Action Taken	Photographs
1.	Spent INR.620000/- for installing VOC, NH3 HCl sensors in production area and PM sensors in Boiler and were connected on line to Care air center.		 <p>ON LINE PROCESS AMBIENT VOC,HCL &amp; NH3 SENSORS</p>
2.	Existing ejector Vacuum system storage tank was removed and five HDPE tanks have been installed to increase the efficiency of the vacuum system and recovery of solvent is Improved		 <p>EJECTOR SYSTEM NEW INDIVIDUAL HDPE TANKS</p>

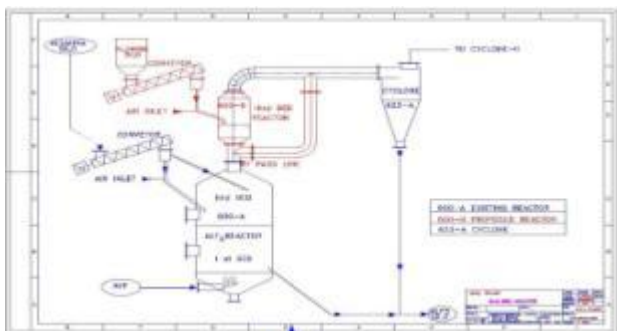
**M/s. TANFAC Industries Limited (ALF3 Plant)**

Sl. No	Action Plan	Compliance and Action Taken	Photographs
1	Further reduction of Fluoride emissions though our emission	The unit has Installed dry scrubber to further reduce emission at source. HF Value before installation of Dry Scrubber Range: 8 to 19 PPM. HF	Reduction of Fluoride emission at source- AIF3 Plant



levels is well within general emission standards of 25 mg/M3 (30 ppm) in AIF3 plant

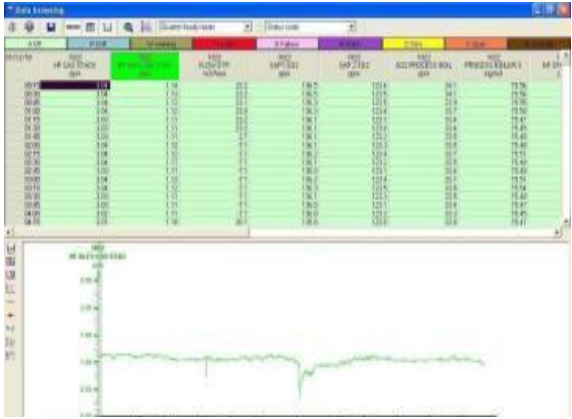
Value after installation of Dry Scrubber is less than 8 ppm. The analysis values of HF by TNPCB and on line graphical HF values are less than 8 ppm after implementation.



Installed Dry scrubber at an investment of 35.0 lakhs which is made of special alloy inconel 600 and associated system. Alumina is added to this third bed which adsorbs the lean HF coming out of reactor. The above Alumina gets converted to product, thereby reducing the HF emission.









Dry Scrubber in AIF3 Plant





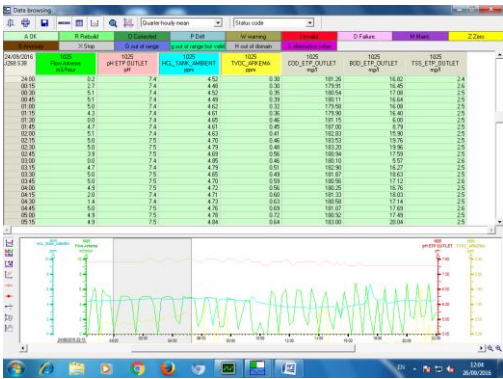
**M/s. Loyal Super Fabrics (Unit of Loyal Textile Mills Ltd.)**

Sl. No	Action Plan	Compliance and Action Taken	Photographs
1.	Biological oxygen demand/Chemical Oxygen Demand (BOD/COD)	Effluent treatment plant are operated & maintained effectively, The BOD	




		& COD value are within the Limit as prescribed by the Board The analysis values are within the limits as prescribed by the TNPCB as per the ROA Report	
2.	Total Suspended solids (TSS)	Filter arrangement has been made on Final Treated Outlet and it is effectively operated & maintained , The analysis values are within the limits as prescribed by the TNPCB as per the ROA Report.	
3.	Hazardous waste authorization for disposing the hazardous wastes for co-processing of cement kiln	Obtained HWA from the board and following the prescribed standards as per the norms. Disposing the hazardous wastes to Ultratech Cements.	
4.	Installation of Filter Press	Filter press has been installed for the effective handling of our sludge	
5.	Installation of Gasket Reactor	Gasket Reactor has been installed for Electro Chemical Oxidation Treatment	

6.	<p>To control high NOx and SPM - To provide Mechanical dust collector for Boiler and TFH stack</p>	<p>The installation of Mechanical dust collector for Boiler and TFH stack has been completed.</p>	
7.	<p>To connect real time on-Line monitoring (provided/existing sensor) data to Care Air Centre</p>	<p>Connected thro' online monitoring with the Care Air Centre and Water Watch Centre, TNPCB (for pH_ETP Cusecs Outlet, SPM_Boiler and Flow Cusecs ETP)</p>	<p>Complied</p>
8.	<p>Green-belt development in and around the company premises</p>	<p>Planted nearly more than 100 trees in and around the company premises.</p>	
9.	<p>Installed BOD,COD,TSS online Analyser system</p>	<p>Online BOD,COD,TSS analyser system installed and is connectivity to be established.</p>	




**M/s. Arkema Peroxides India Pvt. Ltd.**

Sl. No	Action Plan	Compliance and Action Taken	Photographs
1.	Controlling of Total Suspended solids (TSS)	Installed Multi Grade Sand Filter and Activated Carbon filter and achieving TSS of prescribed limit hence it is complying. Complied	 <p data-bbox="1075 766 1407 842">Multi Grade Sand Filter (MGF) &amp; Activated Carbon Filter (ACF)</p>
2.	To connect real time on-Line monitoring (provided/existing sensor) data to Care Air Centre	 <p data-bbox="475 1267 912 1731">Installed online monitoring system to monitor BOD,TSS, COD &amp; pH sensors has been provided in the effluent treated outlet line and HCl&amp; VOC sensor has been provided near to handling area .All the real time on- line monitoring system has been connected with Care Air center and ensure providing the reliable data all the time. Complied</p>	

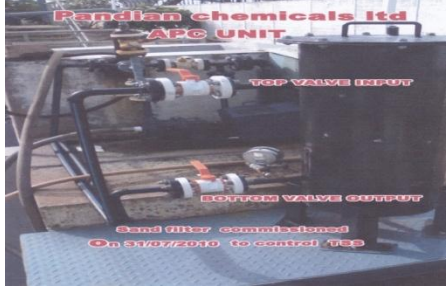
**M/s Poiner Jellice India Pvt. Ltd.**

Sl. No	Action Plan	Compliance and Action Taken	Photographs
1.	To reduce Animal Bone Odour.	Incineration through Boiler, Odour control spray arrangement has been installed.	 <p>The first photograph shows an outdoor boiler unit with a chimney pipe extending from a building. The second photograph shows an indoor industrial setting with a large cylindrical tank and a blue odour control spray arrangement in the foreground.</p>
2.	To reduce ETP Sludge Odour.	The unit has constructed Bio digester.	 <p>The photograph shows a large, cylindrical bio digester structure with a metal staircase and walkway leading to the top. A blue sign is visible on the side of the structure.</p>
3.	To reduce the level of TSS, BOD, TKN, Ammoniacal Nitrogen & Sulphides in the treated trade effluent.	The unit has constructed UASBR	 <p>The photograph shows a large, rectangular UASBR tank with a grid of metal bars across the top. The tank is surrounded by concrete walls and has a blue sign on the side.</p>






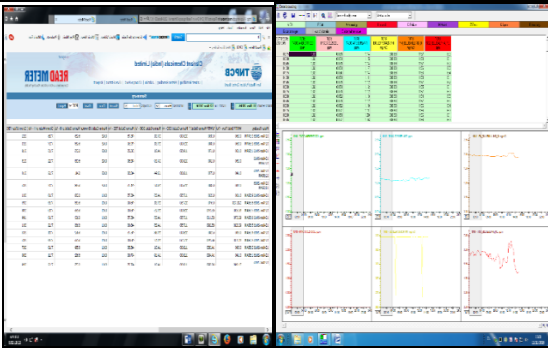
4.	To connect real time On-Line Monitoring (provided / existing Sensor) Data to Care Air Centre.	The unit has provided Online Continuous Monitoring System and connected to Care Air Centre, TNPCB, Chennai for the following parameters: 1) Effluent outlet flow meter. 2) pH 3) Temperature 4) SPM for Boiler Stack	
5.	To connect real time On-line monitoring data for water quality to WQW Centre, Chennai	The unit has recently installed On-line continuous monitoring system to measure the parameters COD, BOD, TSS and pH and the unit is yet to connect to real time monitoring by WQW Centre, Chennai shortly through a suitable software in the month of August 2019.	
6.	To develop adequate Green Belt in SIPCOT	The unit has planted Total number of 7,495 trees as on 05.06.2019. Every year the unit has planted roughly 200 ~ 300 Nos. of various trees per year for the past five years.	

**M/s. Pandian Chemicals Limited**

Sl. No	Action Plan	Compliance and Action Taken	Photographs
1	To install sand filter to control TSS in our treated effluent.	Installed Sand filter to remove Total Suspended Solids in our treated effluent.	

**M/s. Clariant Chemicals (India) Limited**



Sl. No	Action Plan	Compliance and Action Taken	Photographs
1.	Conversion of 3 ton lignite fired boiler to bio fuel to reduce SO2 emission.	Completed. The unit has discarded the 3 ton lignite fired boiler and installed 8 ton bio briquette fired boiler for reducing SO2 emission. Complied	
2.	SPM sensor for boiler stack to be installed.	Completed. The unit has installed the SPM sensor at boiler stack and connected to care air centre. Complied	
3.	Health Impact study	Health impact study done by CSIA	

4.	Green belt development	<p>The unit has utilized more than 35% of the total area for green belt development.</p> <p>Complied</p>	
5.	Online monitoring system:	<p>The unit has installed 15 online sensors for both emission as well as effluent. 6 sensors are connected to care air center and 9 sensors are connected to water quality watch.</p> <p>Complied</p>	
6.	Action plan for solvent reduction	<p>The unit has taken the following actions for reduction of solvent emission:</p> <p>Change of cooling medium from cooling water to chilled water.</p> <p>Increase in the condenser heat transfer area from 12M2 to 25 M2</p> <p>Reduction in the Chilled water temperature from 14°C to 7 °C.</p> <p>Increase in the chilled water line size from 3” to 6”</p> <p>Installation of higher capacity fan less cooling tower (600 TR) from induced cooling tower (250 +150 TR)</p> <p>Installation of SCADA instrumentation controller system for monitoring MCB distillation.</p> <p>Introduction of separator system for separating aqueous and organic layer.</p> <p>Frequent de- scaling of condensers.</p>	



**M/s. CUDDALORE SIPCOT INDUSTRIES COMMON UTILITIES LIMITED (CUSECS Ltd.)**

This is a common marine disposal system for the disposal of treated effluents from thirteen number of member industries in SIPCOT Industrial Complex, Cuddalore. This system has pipe line systems to collect the treated effluents from the member industries in a common sump from where the treated effluent is pumped into the sea through a common pipeline laid for 1 km into the sea bed. This outlet pipe has online monitoring systems for the parameters pH, Flow, BOD, COD, TSS, Temp.

Sl. No	Action Plan	Compliance and Action Taken	Photographs
	Provide Gensets in all pump houses		
			

Standby Generator at Sump – 6

Standby Generator at Sump – 2

**6.2 Other Initiatives in CEPI Area**

The industries are pursued to install the latest systems in the Effluent Treatment plants and in the Air pollution Control systems continuously.

X—X—X

## 7.0 PROPOSED ACTION PLAN

### 7.1 Proposed Short Term Action Plan

#### Proposed Action plan for the improvement by the Industries

SI No.	Name of the Industry	Action Plan	Target
1)	Tagros chemicals India private limited (Zero Liquid Discharge System)	1) High COD Reduction- Proposal for MBR (Membrane Bio Reactor) System. 2) Reduction of RO Reject- Proposal for Reject Treatment RO System HBR(Membrane Bio Reactor) System. <b>₹3 Crores/-</b>	December 2020
2)	Solara Active Pharma Sciences Limited (Zero Liquid Discharge System)	<b>Pre-Treatment</b> - Installation and commissioning of Diffused Air Flootation and Oil Skimmer Plant to reduce the TSS and COD from the primary effluent at a cost of <b>₹347300/-</b>  <b>Reject waste management-</b> Installation of ATFD with capacity of 1610 kg/hr and Duplex MOC to handle the chloride content of the effluent at a cost of <b>₹17100000/-</b>  Replacing the horizontal	December 2020

		Calendria with Vertical calendria of existing MEE to improve the efficiency of the plant at a cost of ₹4602000/-	
3)	DFE Pharma India Private Limited (Zero Liquid Discharge System)	Planned to install wet scrubber at the ATFD vapour outlet.	December 2020
4)	Amcor Flexibles India Pvt Ltd (Zero Liquid Discharge System)	1) Solar pan to be covered to control to avoid rain water penetration (only at raining time).  2) Proposed to develop green belt near Pachayankuppam village around 100 Nos.	May 2020
5)	Covestro (India) Private Limited (Zero Liquid Discharge System)	Quick sludge removal process from Biological treatment tank is planned for better moisture removal from the Sludge which will aid for better drying also.	May 2020
6)	Kawman Pharma (Zero Liquid Discharge System)	Water will be replaced with Methanol in the process.	June 2020
7)	Crimsun Organics Private Limited (Zero Liquid Discharge System)	Zero Liquid discharge system with ETP and Tertiary Treatment System is provided. Commercial Production yet to be started.	

8)	Chemplast Sanmar Ltd (Zero Liquid Discharge System)	Zero Liquid discharge system with ETP and Tertiary Treatment System is provided.	
9)	Asian Paints Ltd (Zero Liquid Discharge System)	Zero Liquid discharge system with ETP and Tertiary Treatment System is provided.	
10)	TANFAC Industries Limited Effluent Disposed into CUSECS.	Proposed to Install Additional Filter Press at ETP – 10 MTPD – Treated	March 2020
11)	Vivin Tex Effluent Disposed into CUSECS.	Installation of new sludge dryer	December 2020
12)	Arkema Peroxides India Pvt Ltd Effluent Disposed into CUSECS.	1) Proposed to provide scrubber arrangements in effluent collection sump. 2) Proposed to implement the mechanized dewater system – Filter press arrangements for removal of excess biomass from the aeration pond.	May 2020
13)	Pioneer Jellice India P. Limited Effluent Disposed into CUSECS.	1) Planning for increase the UF & RO capacity 80 KL/hr 2) Proposed for Construction of USBR 1650 KLD stand by, hydraulic load 100 KI/hr	December 2020
14)	TATA Chemicals Ltd Effluent Disposed into CUSECS.	1. Online PH meter, BOD, COD sensors under installation for PH monitoring and neutralization.	May 2020

		<p>2.Automation for caustic dosing system to neutralization.</p> <p>3.Automation for Flocculent Dosing system to improve the purity of water treatment.</p>	
15)	Clariant Chemicals (I) Ltd Own Marine Disposal system.	Proposed for construction of guard pond for 1000KLD to store treated trade effluent for storage	May 2020

## 7.2 Proposed long term Action Plan

The industries in SIPCOT Industrial Complex have planted and maintained 1,73,548 trees over an Area of 280 Acres. The industries have proposed to plant about 6100 number of Trees during the year 2020 – 21.

x—x—x

## **8.0 CEPI SCORE FOR THE POST MONSOON 2019**

The efforts of the TNPCB in making the industries install cleaner technologies in the Effluent Treatment systems, installation of Air Pollution Control Systems with continuous online recording systems of the concentrations of emission let out into the environment and the development of green belt by planting trees in and around the SIPCOT premises have resulted in the overall improvement of the Environmental Standards in the past decade. This has also resulted in the reduction of CEPI score for the year 2019.

**The CEPI score for 2019 for Air Environment is 25, Water Environment is 16 and Land Environment is 11.5.**

**The overall CEPI score for the year 2019 is 26.38 (Annexure – IV)**

**x—x—x**

## 9.0 CONCLUSION

The air sampling locations are fixed based on the upwind, downwind, crosswind of the industrial cluster. The Average pollution load of emissions for the year 2017 – 2019 in the CEPI Area is PM - 179.07 Kg/day, SO<sub>x</sub> - 151.05 Kg/day, NO<sub>x</sub> – 206.12 Kg/day, and the average stack height is 24.9 meter.

The annual average results of CAAQM station for the period from 2017 – 2019 for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> is 37.31µg/m<sup>3</sup>, 23.53 µg/m<sup>3</sup>, 12.55 µg/m<sup>3</sup>, 4.73 µg/m<sup>3</sup> respectively. The present continuous AAQM Monthly Average data for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> is 19.0 µg/m<sup>3</sup>, 16.96 µg/m<sup>3</sup>, 11.17 µg/m<sup>3</sup> and 5.04 µg/m<sup>3</sup>. Based on these the concentration of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> in all the locations are well below the NAAQM Standards. **CEPI Score as per the revised guidelines of CPCB is calculated as Air – 25 and the status as A<sub>normal</sub>.**

The Surface water samples were collected for CEPI 2018, at different locations of the Uppanar river. Basically Uppanar river contains the backwaters from the sea due to tidal variations. The reference sample of sea water was collected on 27.11.2019 at a distance of 500 meters from the mouth of Uppanar River in which the TDS is 29186 mg/Lt and the total hardness is around 9000 mg/ Lt. The Concentration of TDS and Total hardness in Uppanar River will vary based on the tidal fluctuations.

During CEPI monitoring for Surface water the parameters selected are Total Hardness, TDS and Phenol. Since the Uppanar River is saline water, the parameters Total Hardness, TDS and Phenol could not be compared with IS 10500: 1991 Drinking water standards. Hence additional four Surface water locations have been identified in the core and impact zones and the water samples were collected.

The Report of Analysis of the Water samples collected in Uppanar and additional surface water sources indicates that there is no Phenolic Compounds in the surface water. **Based on the above results the CEPI score for Water Environment has been calculated and found the CEPI score as 16.0 and the status as W<sub>normal</sub>.**

Based on the reports of Analysis of the ground water samples the following were inferred. Out of the nine ground water samples collected in and around SIPCOT Industrial Complex, the levels of TDS and Chlorides in one sample is above the permissible level of 2000 mg/ Lt and 1000 mg/ Lt when compared with the Drinking water standards IS 10500:1991.

The other five samples shows that the level of TDS and chlorides are within the Acceptable Limit. All the other parameters are within the acceptable limits of Drinking water standards in all the samples. Based on the above results the CEPI score has been recalculated and found the **CEPI score as 11.5 for Land and the status as L<sub>normal</sub>**.

**The CEPI score for 2019 for Air Environment is 25, Water Environment is 16 and Land Environment is 11.5.**

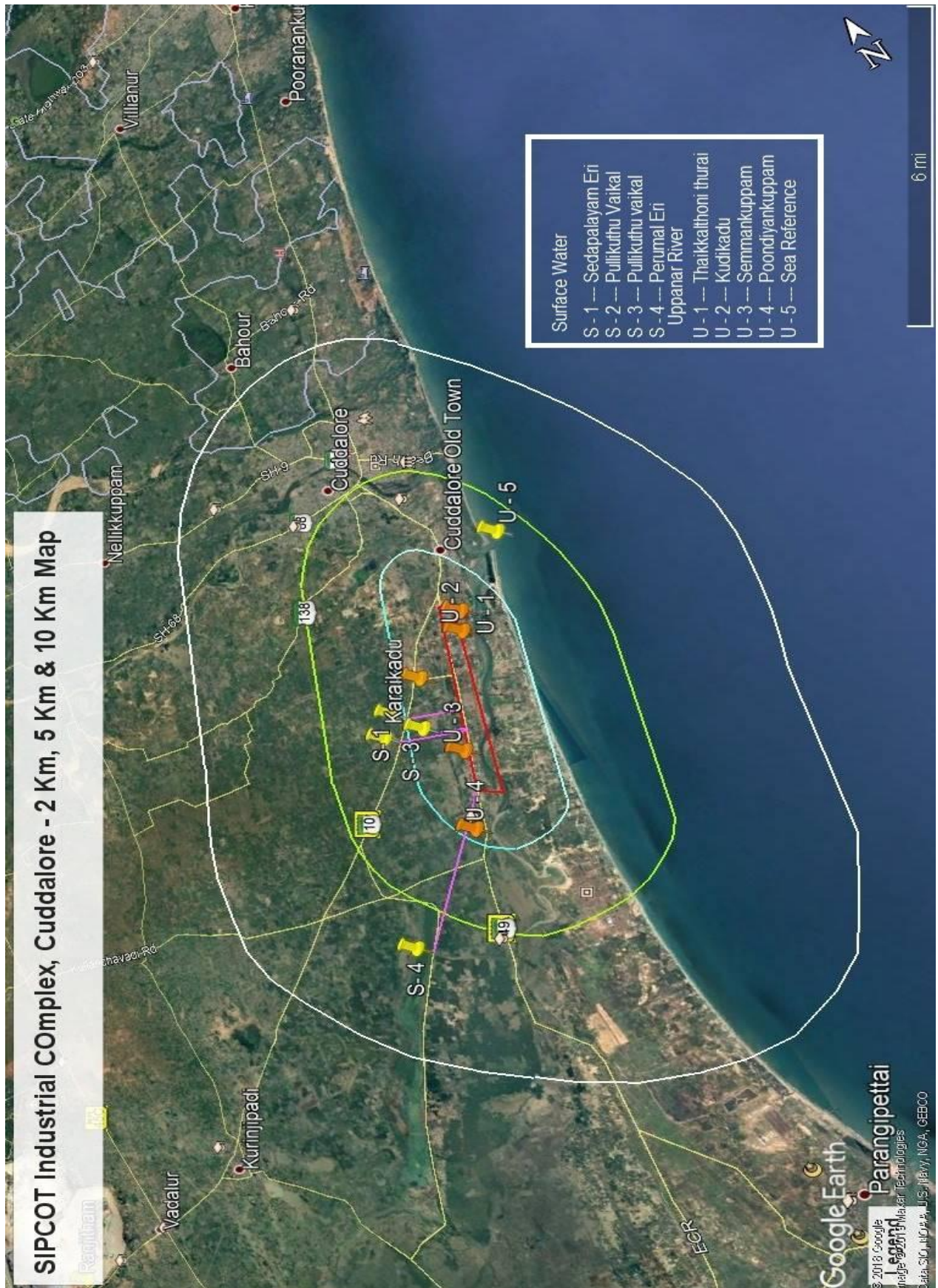
**The overall CEPI score for the year 2019 is 26.38 and the status as A<sub>n</sub> – W<sub>n</sub> - L<sub>n</sub>**

X—X—X



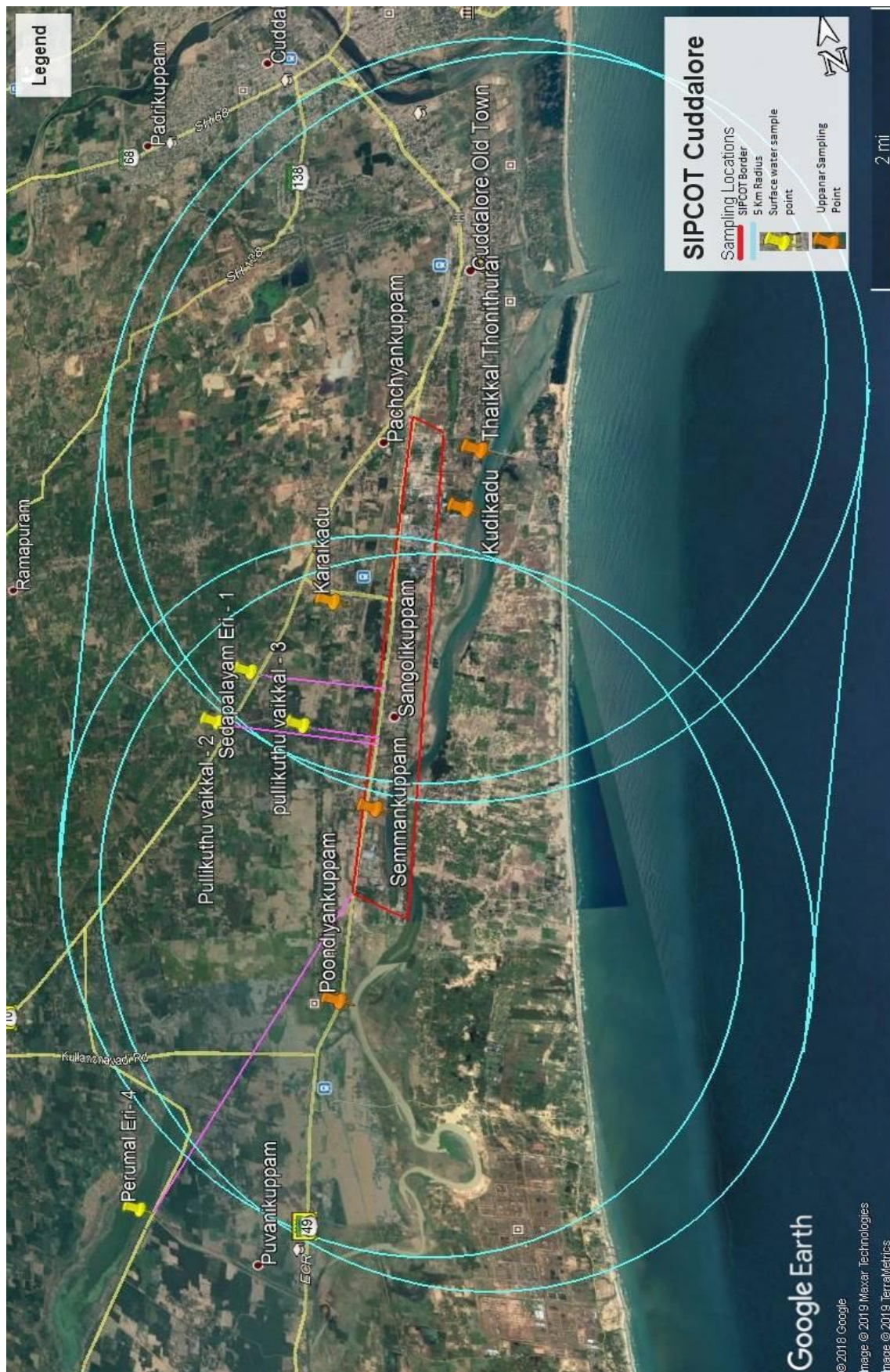
# ANNEXURES

**A1 CEPI Boundary Map showing Core zone, Impact zone & Buffer zone**

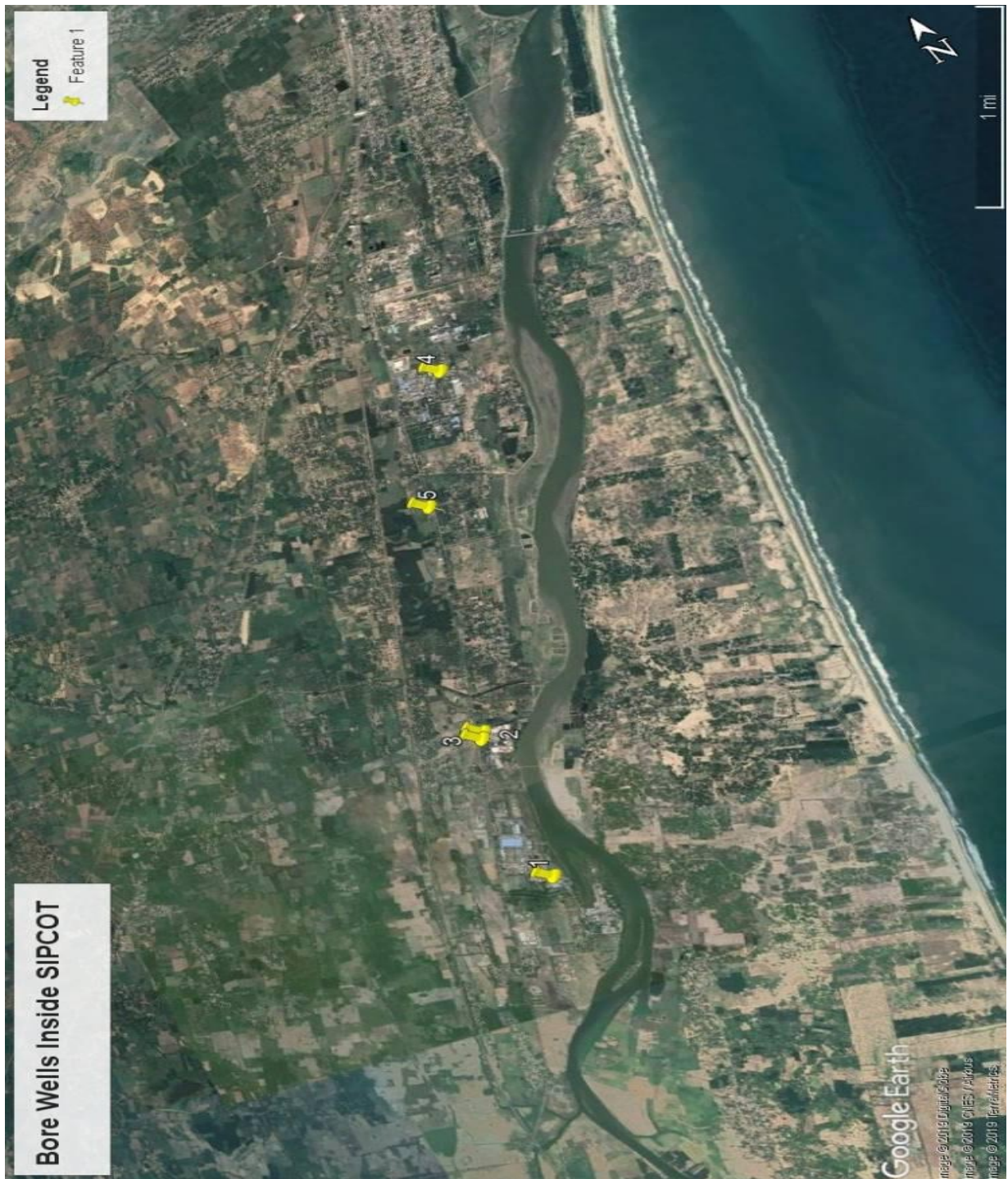




**A2 Boundary Map showing sampling locations of Air, Water, Ground Water in CEPI Area**





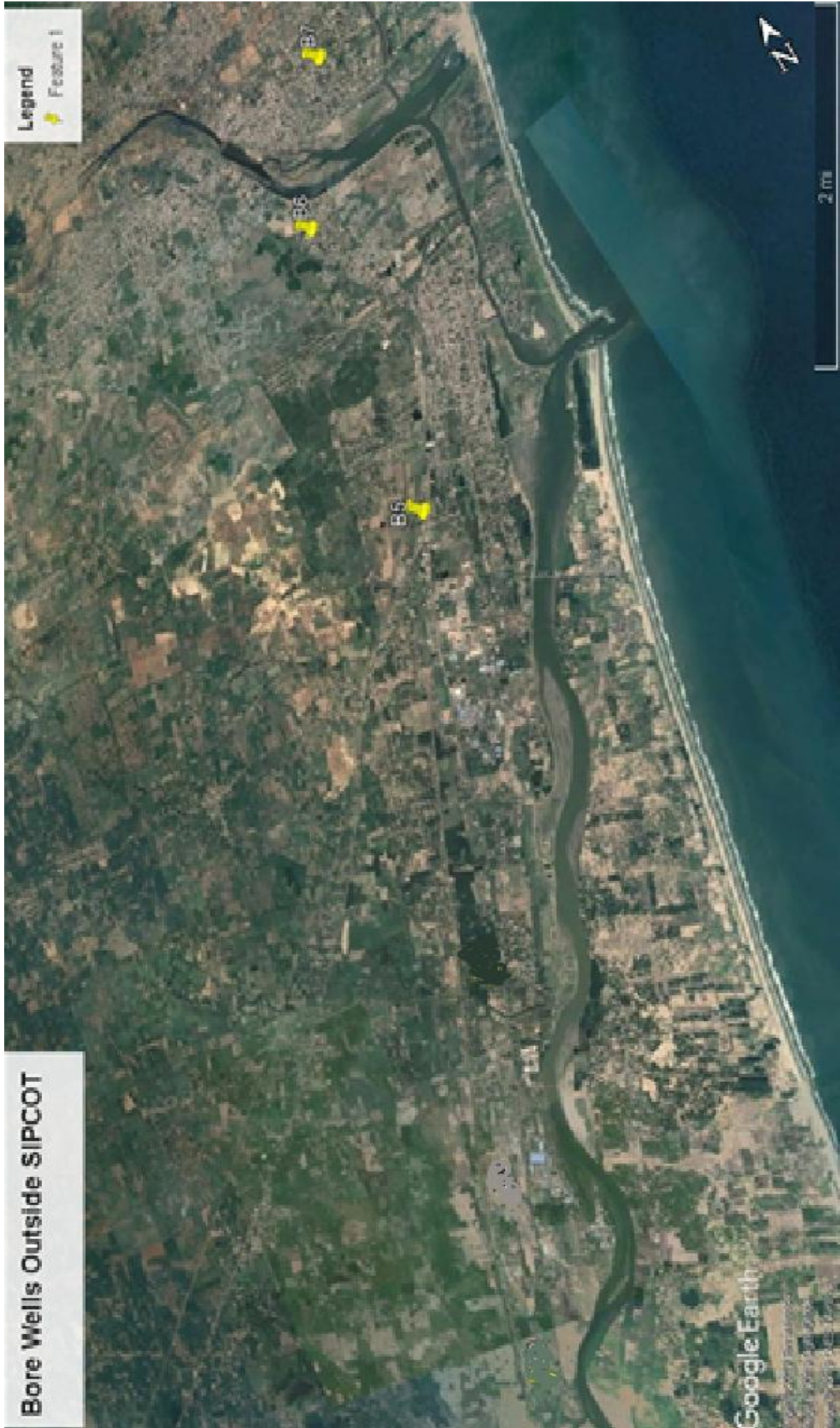


Bore Wells Inside SIPCOT

**Borewells inside SIPCOT**



# Bore Wells Outside SIPCOT





### A3 Health data obtained from hospitals

#### Information on Pollution Sources Status in PIA

1. Name of the Polluted Industrial Area (PIA): Villages (Pachayankuppam, Kudikadu, Sangolikuppam, Semmankuppam) around SIPCOT Industrial Complex, Cuddalore
2. Name of the Major Health Centre / Organisation: **KRISHNA HOSPITAL**
3. Name and Designation of the Contact Person: **DR. K. KRISHNAMURTHY MD.**
4. Address: **17A, HOSPITAL ROAD, CUDDALORE - 607001**

Sl. No.	Air Borne Diseases	No. of patients reported during the year					
		2017-2018	2017-2016	2016-2015	2015-2014	2014-2013	2013-2012
1.	Asthma	0	1	0	0	2	1
2.	Acute Respiratory Infection	3	11	5	13	2	8
3.	Bronchitis	0	0	0	3	1	8
4.	Cancer	0	1	1	1	1	1
	Water Borne Diseases						
5.	Gastroenteritis	4	3	4	8	11	5
6.	Diarrhea	2	3	1	3	1	7
7.	Renal diseases	2	3	0	0	2	1
8.	Cancer						

*[Handwritten Signature]*

Signature of Hospital Head/Superintendent

**KRISHNA HOSPITAL**  
**Unit of Krishna Hospital &**  
**Research Foundation**  
**No. 17-A, Hospital Road,**  
**CUDDALORE - 607 001.**



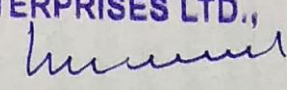
Information on Pollution Sources Status in PIA

1. Name of the Polluted Industrial Area (PIA): Villages (Pachayankuppam, Kudikadu, Sangolikuppam, Semmankuppam) around SIPCOT Industrial Complex, Cuddalore
2. Name of the Major Health Centre / Organisation:
3. Name and Designation of the Contact Person:
4. Address:

Sl. No.	Air Borne Diseases	No. of patients reported during the year					
		2017-2018	2017-2016	2016-2015	2015-2014	2014-2013	2013-2012
1.	Asthma	0	0	0	0	0	0
2.	Acute Respiratory Infection	0	0	0	0	0	0
3.	Bronchitis	0	0	1	1	2	0
4.	Cancer	0	0	0	0	0	0
	Water Borne Diseases	0	0	0	0	0	0
5.	Gastroenteritis	0	0	0	0	0	0
6.	Diarrhea	0	0	0	0	0	0
7.	Renal diseases	0	0	0	0	0	0
8.	Cancer	0	0	0	0	0	0

Signature of Hospital Head/Superintendent

**For ARCOT HOSPITALS &  
ENTERPRISES LTD.,**

  
**Managing Director.**

**A4 Photos of improvements carried out by Industries & other initiative works in CEPI Area**



**Pressure sand filter installed in M/s. Arkema Peroxide**



**UASBR installed in M/s. Pioneer Jellice India Limited**



**Biofilter replaced with ACF in M/s. Solara Active Pharma Sciences Limited**



**Multiple Effect Evaporator in M/s. Kawman Pharma.**



## A5 Analysis Report for the present CEPI score (Post Monsoon ,November, 2019)

### *Report of Analysis of the Borewells collected inside SIPCOT*

#### Report of Analysis of Bore Well collected on 21.02.2019 and 22.02.2019.

Sl. No.	Parameters	Unit	Sample Code No.					
			SIP-3G	SIP-9G	SIP-14G	SIP-15G	SIP-24G	SIP-28G
1	Color	Physical observation	Colourless	Colourless	Colourless	Colourless	Colourless	Colourless
2	Odour	Physical observation	Un-objectionable	Un-objectionable	Un-objectionable	Un-objectionable	Un-objectionable	Un-objectionable
3	Turbidity	NTU	2 NTU	2 NTU	2 NTU	2 NTU	3 NTU	3 NTU
4	pH @ 25°C	-	6.74	7.24	6.94	6.91	6.65	7.29
5	Conductivity	µmho/cm	2150	1031	3990	923	809	521
6	Total Dissolved Solids @ 180°C	mg/L	1398	670	2594	600	526	340
7	Chloride as Cl	mg/L	320	290	1250	245	140	105
8	Sulphate as SO <sub>4</sub>	mg/L	140	116	296	80	102	52
9	Fluoride as F	mg/L	<MDL	0.358	0.26	<MDL	<MDL	<MDL
10	Total Phosphate as PO <sub>4</sub>	mg/L	<MDL	2.124	0.105	0.145	<MDL	<MDL
11	Total Residual Chlorine	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
12	Total Alkalinity as CaCO <sub>3</sub>	mg/L	196	288	268	264	104	164
13	Phenolphthalein Alkalinity as CaCO <sub>3</sub>	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
14	Calcium as Ca	mg/L	144.29	80.16	46.49	88.18	44.09	32.06
15	Magnesium as Mg	mg/L	43.74	9.72	22.36	31.59	26.73	7.78
16	Nitrite Nitrogen as NO <sub>2</sub> -N	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
17	Nitrate Nitrogen as NO <sub>3</sub> -N	mg/L	11.12	2.64	10.63	4.14	1.21	1.7
18	Free Ammonia as NH <sub>3</sub>	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
19	Copper as Cu	mg/L	<MDL	0.443	<MDL	<MDL	<MDL	<MDL
20	Zinc as Zn	mg/L	0.398	0.119	0.12	0.108	<MDL	<MDL
21	Lead as Pb	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
22	Total Chromium as Cr	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
23	Cadmium as Cd	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
24	Nickel as Ni	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
25	Iron as Fe	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	0.303
26	Sulfide as S	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL

**Report of Analysis of the Borewells collected outside SIPCOT**

Sl. No.	Parameters	Unit	Sample Code No.		
			SIP-31 G	SIP-32 G	SIP-33 G
1	Color	Physical observation	Colourless	Colourless	Colourless
2	Odour	Physical observation	Un-objectionable	Un-objectionable	Un-objectionable
3	Turbidity	NTU	3 NTU	3 NTU	3 NTU
4	pH @ 25°C	-	6.86	6.81	6.72
5	Conductivity	µmho/cm	1430	720	769
6	Total Dissolved Solids @ 180°C	mg/L	928	450	480
7	Chloride as Cl	mg /L	400	180	190
8	Sulphate as SO <sub>4</sub>	mg /L	150	70	85
9	Fluoride as F	mg /L	<MDL	0.32	0.358
10	Total Phosphate as PO <sub>4</sub>	mg /L	0.112	<MDL	0.273
11	Total Residual Chlorine	mg /L	<MDL	<MDL	<MDL
12	Total Alkalinity as CaCO <sub>3</sub>	mg /L	120	228	192
13	Phenolphthalein Alkalinity as CaCO <sub>3</sub>	mg /L	<MDL	<MDL	<MDL
14	Calcium as Ca	mg /L	72.14	36.07	20.04
15	Magnesium as Mg	mg /L	11.66	12.15	24.3
16	Nitrite Nitrogen as NO <sub>2</sub> -N	mg /L	<MDL	<MDL	<MDL
17	Nitrate Nitrogen as NO <sub>3</sub> -N	mg /L	1.71	1.79	2.36
18	Free Ammonia as NH <sub>3</sub>	mg /L	<MDL	<MDL	<MDL
19	Copper as Cu	mg /L	<MDL	<MDL	<MDL
20	Zinc as Zn	mg /L	<MDL	<MDL	<MDL
21	Lead as Pb	mg /L	<MDL	<MDL	<MDL
22	Total Chromium as Cr	mg /L	<MDL	<MDL	<MDL
23	Cadmium as Cd	mg /L	<MDL	<MDL	<MDL
24	Nickel as Ni	mg /L	<MDL	<MDL	<MDL
25	Iron as Fe	mg /L	<MDL	<MDL	<MDL
26	Sulfide as S	mg /L	<MDL	<MDL	<MDL

**TAMILNADU POLLUTION CONTROL BOARD**



**CEPI Action Plan**

**Consolidated ROA of samples collected in  
Surface water samples collected on 27.11.2019.**

**STATEMENT OF REPORT OF ANALYSIS**

**Surface water Samples**

Sl. No	Parameters	Unit	Sedapalayam Eri	Pullikuthu Vaikal	Pullikuthu Vaikal (Near Railway Gate)	Perumal Eri - Near Poovanikuppam New Sluice Gate
	<b>Sample Code</b>		<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
1	pH @ 25° C	-	8.90	9.08	8.87	8.82
2	Total Suspended Solids @ 105C	mg/L	12	10	14	16
3	Total Dissolved Solids @ 180°C	mg/L	312	296	248	706
4	Chloride as Cl	mg/L	105	85	80	245
5	Sulphate as SO <sub>4</sub> <sup>2-</sup>	mg/L	32	28	36	112
6	Oil & Grease	mg/L	<MDL	<MDL	<MDL	<MDL
7	BOD @ 27°C 3 days	mg/L	18	16	18	20
8	COD	mg/L	72	64	76	84
9	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	mg/L	<MDL	<MDL	<MDL	<MDL

Note: <MDL indicates Less than minimum detectable limit.\_

**Uppanar samples collected on 27.11.2019**

Sl. No	Parameters	Unit	Uppanar Thaikkalthonithurai	Uppanar Kudikadu	Uppanar Nochikadu	Uppanar Poondiyamkuppam	Sea Reference. (500mt into the sea from Uppanar Mouth).
	Sample Code		1	2	3	4	5
1	pH @ 25° C	-	8.62	8.68	8.94	8.99	8.31
2	Total Suspended Solids @ 105C	mg/L	20	18	12	12	10
3	Total Dissolved Solids @180°C	mg/L	5038	5272	1298	568	29186
4	Chloride as Cl	mg/L	1350	1659	405	155	9947
5	Sulphate as SO <sub>4</sub> <sup>2-</sup>	mg/L	952	990	202	92	3200
6	Oil & Grease	mg/L	2.0	2.0	2.0	<MDL	<MDL
7	BOD @ 27°C 3 days	mg/L	26	28	20	24	22
8	COD	mg/L	108	120	80	96	88
9	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	mg/L	<MDL	<MDL	<MDL	<MDL	<MDL

Date	TNPCCB CAC _ Online Ambient Air Quality Monitoring Data						
	UOM	SOX	NOX	O3	PM10	PM2.5	Benzene
Average 17-18	µg/m3	10.15	3.82	70.99	35.61	21.18	0.05
Average 18-19	µg/m3	14.96	5.64	72.38	39.01	25.88	0.00

## Tamil Nadu State Pollution Control Board Online Pollution Monitoring Portal

From Date: 01-11-2019 To Date: 30-11-2019

Date & Time	PM10 µg/m <sup>3</sup>	PM2.5 µg/m <sup>3</sup>	SO2 µg/m <sup>3</sup>	NOx µg/m <sup>3</sup>	O3 µg/m <sup>3</sup>
Prescribed Standards	0 - 100	0 - 60	0 - 60	0 - 60	0 - 180
Min	9.76	8.58	4.67	5.38	4.5
Min Detected at:	2019-11-30	2019-11-15	2019-11-12	2019-11-05	2019-11-18
Max	35.32	33.19	18.87	9.54	5.98
Max Detected at:	2019-11-06	2019-11-06	2019-11-26	2019-11-27	2019-11-09
Avg	19	16.96	11.17	7.27	5.04
STDEV	7.42	7.35	5.44	1.06	0.39

**Tamil Nadu Pollution Control Board**

**CEPI Calculation of SIPCOT Industrial Complex Cuddalore for Post Monsoon**

Comprehensive Environmental Pollution Index (CEPI) Working Sheet as per revised Formula given by CPCB Vide Lr No. B-29012/ESS (CPA)/2015-16/ Dated 26.4.2016

Hazard = Pollutant Source, Pathway and Receptor

**1. Air Environment:**

**A: Source:**

**Factor A1- Presence of Toxins:**

**1. Criteria pollutants: Arsenic (As)**

Pollutant	Measured Mean Concentration	Score
Group-C - Arsenic (Pollutant that are known carcinogens)	3.69 ng/m <sup>3</sup>	3
<b>Score of Criteria Pollutant = Maximum Score of criteria pollutant (3)</b>		<b>3</b>

**2. Secondary Pollutants: (PM10,PM2.5)**

Group-B–PM10(Pollutant that are probable carcinogens)	92.77 µg/m <sup>3</sup>	0.5
Group-B–PM2.5(Pollutant that are probable carcinogens)	42.79 µg/m <sup>3</sup>	0.5
<b>Score of secondary pollutant = Sum of all secondary pollutant score</b>		<b>1</b>

<b>A1 = Criteria pollutant score + Secondary pollutant score</b>		<b>4</b>
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**Factor A2- Scale of industrial activities:**

SIPCOT Industrial Complex Cuddalore: Five 17 category industries and Fifteen red category industries are located		
<b>A2 (As per guideline) =</b>		<b>4</b>

<b>Score A = A1 x A2 = 4*4</b>		<b>16</b>
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**B: Pathway:**

**1. Primary Pollutants:**

Level of Exposure is to be calculated using SNLF and the value given Table. SNLF refers to Surrogate number.

SNLF = (No. of samples exceed / total No. of samples) X (Exceedance factor) Exceedance

Factor = Observed mean concentration of pollutant/Standard

**1.1 Primary Pollutant: -Arsenic (As).**

Arsenic (As): Observed Mean concentration (ng/m <sup>3</sup> ) = 24 hrs Average	3.69	-
Arsenic (As): Standard (ng/m <sup>3</sup> ) Annual Average	6	-
Arsenic (As): Exceedance Factor = (Observed concentration of pollutant/Standard)	0.62	-
No. of samples exceed the standard =	0	-
Total no. of samples =	12	-
<b>SNLF (Arsenic (As)) = (No. of samples exceed / total No. of samples) X (Exceedance factor)</b>	<b>0</b>	<b>-</b>

<b>EF &lt; 0.75, SNLF = 0. Hence the Level of exposure Category of Arsenic (As): Low, Value (From Table) = 0</b>		<b>0</b>
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<b>Contribution of Primary Pollutant = B1 = Maximum Score of criteria pollutant</b>	<b>0</b>
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**2. Secondary Pollutants:**

**Secondary Pollutant: -PM10**

<b>PM10: Observed mean concentration (µg/m<sup>3</sup>) =</b>	92.77	-
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<b>PM10: Standard (<math>\mu\text{g}/\text{m}^3</math>)=</b>	100	-
<b>PM10: Exceedance Factor= Observed mean concentration of pollutant/Standard</b>	0.93	-
<b>PM10: No.of samples exceed the standard =</b>	1	-
Total no. of samples =	12	-
<b>SNLF (PM10) = (No.of samples exceed / total No. of samples) X (Exceedance factor)</b>	<b>0.08</b>	9
<b>EF &lt; 0.75, SNLF = 0. Hence the Level of exposure Category of PM10: Medium Value = 9</b>		<b>9</b>

**Secondary Pollutant:PM2.5**

<b>PM2.5: Observed mean concentration (<math>\mu\text{g}/\text{m}^3</math>) =</b>	42.79	-
<b>PM2.5: Standard (<math>\mu\text{g}/\text{m}^3</math>)=</b>	60	-
<b>PM2.5: Exceedance Factor =</b>	0.71	-
Total no. of samples =	12	-
<b>PM2.5: No.of samples exceed the standard =</b>	0	-
<b>SNLF (PM2.5) = (No.of samples exceed / total No.of samples) X (Exceedance factor)</b>	<b>0</b>	-

<b>EF &lt; 0.75, SNLF = 0. Hence the Level of exposure Category of PM2.5: Low, Value = 0</b>		<b>0</b>
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<b>Contribution of Secondary Pollutant = B2=Sum of the score of secondary pollutants</b>	<b>9</b>
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<b>B = B1 + B2 = 0+9</b>	<b>9</b>
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**C: Receptor:**

It is relevant to Impact on Human Health - Based on the previous 5 years' records of 3-5 major hospitals of the area. For Air Environment, total no. of cases related to Asthma, Bronchitis, Cancer, Acute Respiratory infections etc are to be considered. The values are taken from the Table given by CPCB

<b>For Cuddalore, the health data is not readily available. Hence C value is taken as =0</b>	<b>0</b>
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**D: Additional High Risk Element:**

All large and common facilities for pollution control have adequately designed/operated and maintained pollution control facilities but medium and small industries having inadequate capacity / operation and maintenance

Hence D (From CPCB Guidelines) =

0

**Sub-Index Score (Air) = (A+B+C+D) = 16+9+0+0**

**25**

**2. Water Environment:**

**Surface Water Source taken up for study:** The Uppanar River contains the backwater from sea which enters through the Uppanar mouth during every day tidal variations. This water is not used for any domestic or irrigation purposes by the public.

Additional four surface sources identified Sedapalyam Eri, Pullikuthi Vaikkal, Pullikuthi Vaikal near railway line and Perumal Eri.

**A: Source:**

**Factor A1- Presence of Toxins:**

**1. Criteria pollutants: - (Phenol)**

Pollutant	Measured Mean Concentration	Score
Group A - Phenol (Pollutant not assessed as acute or systemic)	BDL	1
<b>Score of Criteria Pollutant = Maximum Score of criteria pollutant (1)</b>		<b>1</b>

**2. Secondary Pollutants: - (TDS, TH)**

Pollutant	Measured Mean Concentration	Score
Group-A - <b>TDS</b> (Pollutant not assessed as acute or systemic)	8.33	0.25
Group-A – <b>T. Hard</b> (Pollutant not assessed as acute or systemic)		0.25
<b>Score of secondary pollutants = sum of score of secondary pollutants</b>		<b>0.5</b>

<b>A1 = Criteria pollutant score + Secondary pollutants score = 1.0+0.5</b>		<b>1.5</b>
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**Factor A2- Scale of industrial activities:**

SIPCOT Industrial Complex Cuddalore: Five 17 category industries and Fifteen red category industries are located		
<b>A2 (As per guideline)</b>		<b>4</b>

<b>Score A = A1 x A2 = 1.5*4</b>		<b>6</b>
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**B: Pathway**

**1. Primary Pollutants:**

**1.1 Primary Pollutant:- Phenol**

Phenol: Observed Mean Concentration (mg/L) =	0.0001	-
Phenol (mg/L) : Standard :Class- B Desirable CPCB 2002,Water Quality Criteria & Goals- MINARS Series;MINARS/17/2001-2002)	0.01	-
Phenol: Exceedance Factor =	0.01	-
Phenol: Total no. of samples =	4	-
Phenol: No.of samples exceed the standard =	0	-
<b>SNLF (Phenol) = (No.of samples exceed / total No. of samples) X (Exceedance factor)=</b>	<b>0</b>	<b>-</b>

<b>EF 0.01, SNLF = 0.0. Hence the Level of exposure Category of Phenol:Low, Value = 0</b>		<b>0</b>
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<b>Contribution of Primary Pollutant = B1 = Maximum Score of criteria pollutant (0)</b>	<b>0</b>
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### **1.2 (a) Secondary Pollutant: - Total Dissolved Solids**

SNLF = (No. of samples exceed / total No. of samples) X (Exceedance factor)

Total Dissolved Solids: Observed Mean Concentration (mg/L) =	390.5 mg/l	-
Total Dissolved Solids: Standard :Class- B Desirable CPCB 2002,Water Quality Criteria & Goals- MINARS Series;MINARS/17/2001-2002)	2000 mg/l	-
Total Dissolved Solids: Exceedance Factor =	0.195	-
Total Dissolved Solids: Total no. of samples =	4	-
Total Dissolved Solids: No.of samples exceed the standard =	0	-
<b>SNLF (Total Dissolved Solids) = (No.of samples exceed / total No.of samples) X (Exceedance factor)=</b>	<b>0.00</b>	-

<b>EF &lt; 0.75, SNLF = 0. Hence the Level of exposure Category of Total Dissolved Solids : Low, Value = 0</b>		<b>0</b>
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<b>Contribution of Secondary Pollutant = B2 = Maximum Score of criteria pollutant (0)</b>	<b>0</b>
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### **Secondary Pollutant:- Total Hardness**

SNLF = (No. of samples exceed / total No. of samples) X (Exceedance factor)

Total Hardness: Observed Mean Concentration (mg/L) =	676.67 mg/l	-
Total Hardness: Standard :Class- B Desirable CPCB 2002,Water Quality Criteria & Goals- MINARS Series;MINARS/17/2001-2002)	600 mg/l	-
Total Hardness: Exceedance Factor =	1.13	-
Total Hardness: Total no. of samples =	3	-
Total Hardness: No.of samples exceed the standard =	3	-
<b>SNLF (Total Hardness) = (No.of samples exceed / total No.of samples) X (Exceedance factor)=</b>	<b>1.13</b>	-

EF 1.13, SNLF = 1.13. Hence the Level of exposure Category of Total Hardness: High Value = 10	10
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Contribution of Secondary Pollutant = B3 = Maximum Score of criteria pollutant (0)	10
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$B = B1 + B2 + B3 = 0+0+10$	10
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**C: Receptor:**

It is relevant to Impact on Human Health - Based on the previous 5 years' records of 3-5 major hospitals of the area. For Air Environment, total no. of cases related to Asthma, Bronchitis, Cancer, Acute Respiratory infections etc. are to be considered. The values are taken from the Table given by CPCB	
For Cuddalore, the health data is not readily available. Hence C value is taken as =0	0

**D: Additional High Risk Element:**

All large and common facilities for pollution control have adequately designed/operated and maintained pollution control facilities but medium and small industries having inadequate capacity / operation and maintenance	
Hence D (From CPCB Guidelines) =	0

Sub-Index Score (Water) = (A+B+C+D) = (6+10+0+0)	16
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**2. Land Environment:**

Ground Water Quality is considered to represent Land Environment

**A: Source:**

**Factor A1- Presence of Iron (Fe):**

**1. Criteria pollutants: - (Iron ( Fe))**

Pollutant	Measured Mean Concentration	Score
Group C – Iron (Pollutant that are probable carcinogens)	0.08	1
<b>Score of Criteria Pollutant = Maximum Score of criteria pollutant (1)</b>		<b>1</b>

**2. Secondary Pollutants: - (Phenol & Total Phosphorous)**

Pollutant	Measured Mean Concentration	Score
Group-B - Phenols (Pollutant not assessed as acute or systemic)	0.0001 mg/l	0.5
Group A – Total Phosphorous (Pollutant not assessed as acute or systemic)	0.27	0.25
<b>Score of secondary pollutants = sum of score of sec. pollutants =</b>		<b>0.75</b>

<b>Score A1 = (sum of score of Primary pollutant and secondary pollutants) = 1+0.75</b>		<b>1.75</b>
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**Factor A2- Scale of industrial activities:**

Cuddalore SIPCOT Industrial Complex: Five 17 category industries and Fifteen red category industries are located		
<b>A2 (As per guideline) =</b>		<b>4</b>

<b>Score A = A1 x A2 = 1.75 * 4</b>		<b>7</b>
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**B: Pathway**

**1. Primary Pollutants:**

**Primary Pollutant: - Iron**

SNLF = (No. of samples exceed / total No. of samples) X (Exceedance factor)

Iron: Observed Mean Concentration =	0.08	-
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Iron: Standard : Standard IS: 10500-1991 (mg/L) =	0.3	-
Iron: Exceedance Factor =	0.266	-
Iron: Total no. of samples =	9	-
Iron: No.of samples exceed the standard =	0	-
<b>SNLF (Iron) = (No.of samples exceed / total No.of samples) X (Exceedance factor)=</b>	<b>0.0</b>	-

<b>SNLF =0 Hence the Level of exposure Category of Iron: Low, Value = 0</b>		<b>0</b>
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<b>Max contribution of Primary Pollutant = B1</b>		<b>0</b>
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**1.1 Secondary Pollutant: - Phenol**

SNLF = (No. of samples exceed / total No. of samples) X (Exceedance factor)

Phenol: Observed Mean Concentration =	0.0001	-
Phenol: Standard :	0.001	-
Phenol: Exceedance Factor =	0.0	-
Phenol: Total no. of samples =	9	-
Phenol: No.of samples exceed the standard =	0	-
<b>SNLF (Phenol) = (No.of samples exceed / total No.of samples) X (Exceedance factor)=</b>	<b>0.0</b>	-

<b>EF 0.0 SNLF = 0.0 Hence the Level of exposure Category of Phenol: Low, Value = 0</b>		<b>0</b>
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**Secondary Pollutant: - Total Phosphorous**

Total Phosphorous Observed Mean Concentration(mg/L)=	0.27	-
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Total Phosphorous: Standard IS: 10500-1991 (mg/L) =	0.3	-
Total Phosphorous: Exceedance Factor =	0.9	-
Total Phosphorous: Total no. of samples =	12	-
Total Phosphorous: No.of samples exceed the standard =	5	-
<b>SNLF (Total Phosphorous) = (No.of samples exceed / total No.of samples) X (Exceedance factor)= 0</b>	<b>0.38</b>	<b>-</b>

<b>SNLF = 0.38 (EF = 0.9) Hence the Level of exposure Category of Total Phosphorous: Medium, Value = 4.5</b>		<b>4.5</b>
<b>Score of Secondary pollutants = sum of score of secondary pollutants = B2</b>		<b>4.5</b>

<b>B = B1 + B2 = 0+4.5</b>	<b>4.5</b>
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**C: Receptor:**

It is relevant to Impact on Human Health - Based on the previous 5 years' records of 3-5 major hospitals of the area. For Air Environment, total no. of cases related to Asthma, Bronchitis, Cancer, Acute Respiratory infections etc. are to be considered. The values are taken from the Table given by CPCB	
<b>For SIPCOT Industrial Complex, Cuddalore the health data is not readily available. Hence C value is taken as =0</b>	<b>0</b>

**D: Additional High Risk Element:**

All large and common facilities for pollution control have adequately designed/operated and maintained pollution control facilities but medium and small industries having inadequate capacity / operation and maintenance	
<b>Hence D (From CPCB Guidelines) =</b>	<b>0</b>

<b>Sub-Index Score (Water) = (A+B+C+D) = (7+4.5+0+0)</b>	<b>11.5</b>
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**Aggregated CEPI Score:**

$$CEPI = im + [(100-im) * (i2/100) * (i3/100)]$$

Where,

im: maximum sub index; and i2 and i3 are sub-indexes for other media

Sub-Index of Air = 25, Sub-Index of Water = 16, Sub-Index of Land = 11.5

Hence im	=	25
CEPI	=	26.38
<b>CEPI of SIPCOT Industrial Complex Cuddalore (POST MONSOON)</b>	<b>=</b>	<b>26.38</b>



**MINUTES OF THE COMMITTEE MEETING CONSTITUTED FOR CEPI ACTION PLAN OF SIPCOT INDUSTRIAL COMPLEX, CUDDALORE LOCATED IN TAMILNADU HELD ON 09.01.2020 IN THE CHAMBER OF PRINCIPAL SECRETARY ENVIRONMENT & FORESTS DEPARTMENT, SECRETARIAT, CHENNAI.**

**Present:**

1. Thiru. Shambhu Kallollikar I.A.S.,  
Principal Secretary to Government,  
Environment & Forests Department, Secretariat, Chennai.
2. Thiru. A.V.Venkatachalam, I.F.S,  
Chairman,  
Tamil Nadu Pollution Control Board, Chennai.
3. Dr. S.Selvan  
Chief Environmental Engineer,  
Tamil Nadu Pollution Control Board, Chennai
4. Dr. A.Viswanathan, JD (Acts)  
O/o the Directorate of Medical & Rural Health Services
5. Tmt.H.Prabhavathy, GM (PI) i/c  
Representative of State Industries Promotion Corporation of  
Tamilnadu (SIPCOT)
6. Thiru.A.Sohail Ahmed,  
Technical Expert (GP), O/o Chief Engineer, PWD, W.R.O.,  
State Ground & Surface Water Resources Data Centre,  
Taramani, Chennai - 600 113.
7. Other TNPCB Officials.



The Chief Environmental Engineer, Tamil Nadu Pollution Control Board welcomed the committee members and officials of TNPCB and briefed about the new CEPI methodology adopted by CPCB.

Dr.S.Suresh Kumar from G lens Innovations Labs Pvt Ltd on behalf of AC Tech, Chennai (hired as third party by TNPCB for analysis and assessment of CEPI - post monsoon 2019) detailed the the concept of CEPI

and briefed about the individual CEPI scores of CPCB in 2018 in Tamilnadu and the present post monsoon scores in 2019 with regard to Air, Water and Land Environment in the 8 industrial clusters of Vellore, Manali, Coimbatore, Erode, Mettur, Tuticorin, Tiruppur, and Cuddalore.

With regard to Cuddalore CEPI area, Dr.S.Suresh Kumar briefed the following

1. The CEPI scores for the last five periods are as follows

<b>Period</b>	<b>CEPI Score</b>
CEPI Score 2019	26.38
CEPI Score 2018	62.56
CEPI Score 2013	70.12
CEPI Score 2011	54.69
CPCB Report 2009	77.45

2. In the aggregated CEPI score of 2018, it has been reported that the Sub Index values for Air is 25, Water is 58.25 and Land is 41.25, thus the CEPI score was **62.56**, whereas in the present aggregated CEPI score during 2019 for the Sub Index values for Air is 25.0, Water is 16.0 and Land is 11.5, thus the CEPI score has reduced to ~~26.32~~ <sup>26.38</sup>.
3. It has been distinguished for the high CEPI score in 2018 and for low CEPI score in 2019.

The main reasons attributed for high CEPI score include,

- a. The Uppanar river passing adjacent to SIPCOT complex contains the backwater from sea.
- b. Samples were collected in four different places in Uppanar starting from the upstream side of the tidal flow from sea, flowing into Uppanar upto the downstream end.





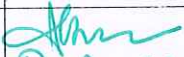
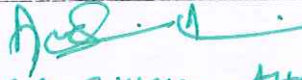
- c. TDS and TH parameters were considered for CEPI calculation and naturally due to sea water backup the TDS and TH were very high and could not be compared with drinking water standards.
- d. Reference sample of Uppanar river mouth water shows high concentration of TDS and TH.

The main reasons for less CEPI score in 2019 include,

- i. The Industries in SIPCOT industrial Complex are adopting Marine disposal or reusing their treated effluents by using ZLD Systems.
  - ii. No trade effluent or sewage generated from industries are discharged into the inland surface water bodies.
  - iii. As Uppanar river is purely sea back water, 4 new sampling locations of surface bodies were identified in the SIPCOT core and zone area. The samples collected and analysed on these locations during 2019, complied the parameters as per the standard norms.
  - iv. All the industries are storing their hazardous waste as per the HWM 2016 guidelines, due to which leachate from hazardous waste is totally prevented.
4. To the queries raised by the Principal Secretary, it was clarified that the critical parameters and locations identified by CPCB during 2018 was also followed while sampling during 2019. Representative of Chief Engineer, PWD, W.R.O. wanted to know whether other parameters could be included for CEPI assessment, for which it was replied that the protocol followed by CPCB had to be adopted for harmonious CEPI calculation every year. To the representative of Director of Medical & Rural Health Services, it was clarified that as per the direction issued by CPCB on 26.04.2016, the air and water borne diseases to be considered in the health data are Asthma, Bronchitis, Cancer, Acute respiratory infections, Gastroenteritis, Diarrhea, renal (kidney) malfunction cancer etc

5. After detailed discussion the committee members decided to approve the CEPI action Plan prepared for SIPCOT Industrial Complex, Cuddalore in Tamil Nadu and to submit to CPCB, New Delhi

With the above, the meeting came to an end.

S.No.	Members	Signature
1.	Thiru. Shambhu Kallollikar IAS., (Chairman of Committee) Principal Secretary to Government, Environment & Forests Department	
2.	Member Secretary, Tamilnadu Pollution Control Board, Chennai	 Dr. S. Selvan For Member Secretary
3.	Director of Medical & Rural Health Services	 Dr. A. VISWAMATH (Asst. Dy JDC (HS))
4.	Representative of State Industries Promotion Corporation of Tamilnadu (SIPCOT)	H. Prathapathy (M. PRABHAVATHY) G. M (CPI) i/c SIPCOT
5.	Chief Engineer, PWD, W.R.O., State Ground & Surface Water Resources Data Centre, Taramani, Chennai - 600 113	 (A. SUBRAMANIAN) Technical Expert (Geophysics) of the Chief Engineer, PWD, SG & SWRC, Chennai - 600 113