TAMILNADU POLLUTION CONTROL BOARD

REVISED ACTION PLAN FOR CRITICALLY POLLUTED AREA

RANIPET

NOVEMBER 2010

INDEX

ACTION PLAN FOR ABATEMENT OF POLLUTION IN CRITICALLY POLLUTED AREA -SIPCOT INDUSTRIAL COMPLEX (PHASE-I& PHASE-II), RANIPET, TAMILNADU

1.0 INTRODUCTION

1.1 Area details

The SIPCOT industrial complex, Ranipet was established during the year 1973.The industrial complex has Phase-I and Phase-II where Petro- chemical, Bulk drugs & Pharmaceuticals, Heavy Engineering, Foundry, Chemicals, Tanneries and miscellaneous industries are located. Ranipet SIPCOT Industrial Complex lies in the North-West of Ranipet town. The area of the SIPCOT Industrial Complex comprising of Phase I & II is 862.91 Acres. Tamil Nadu Pollution Control Board has identified the industries located in Small Industries Promotion Corporation of Tamilnadu (SIPCOT) (PHASE I & II) & Small Industrial Development Corporation Limited (SIDCO) of Ranipet area as the industrial cluster in Vellore (North Arcot) The SIPCOT industrial complex has the following infrastructure such as i) Water supply from head works at Palar river and 16 bore wells at Thengal village adjacent to the river Palar. ii) Roads - Length of 13.75 Km. Apart from this a Post office, Fire station, Police station, Bank, School, ESI dispensary & Canteen are being operated in this area

The SIPCOT industrial complex, Ranipet is surrounded by the following topography

North - Agaravarm Village

East - Vanapadi Village

South - Karai Village

West - Puliyenkanu Village

1.2 Location

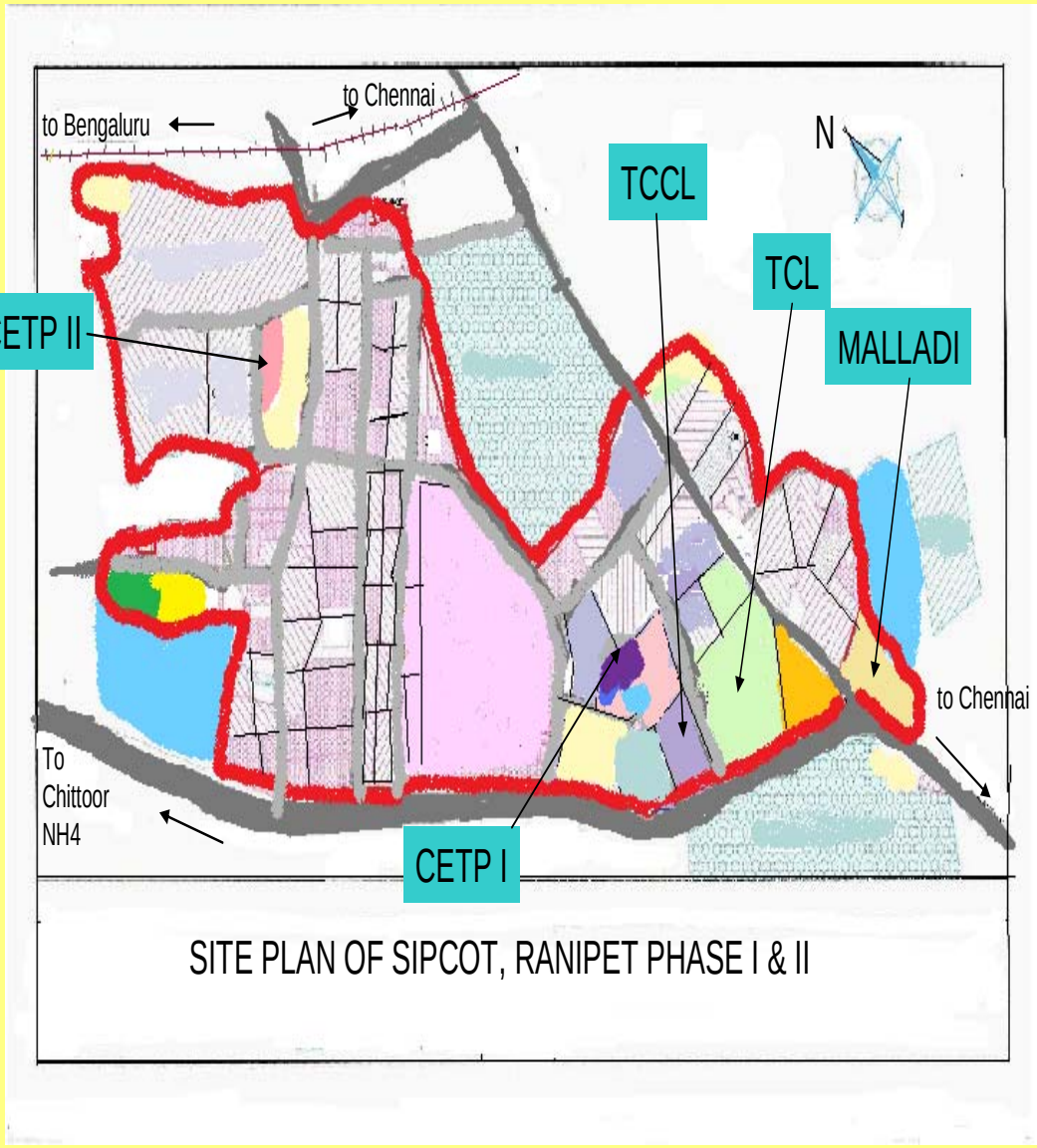
The Ranipet Town is located at 12 56^{o} Northern latitude and 79.20^{o} eastern longitude and is 93 KM west of Chennai. It is geographically 25 Km away in the North East of Vellore, the District Headquarters of Vellore District. Ranipet has been selected by the SIDCO & SIPCOT to establish the estates/complexes, since it is situated at a distance of 3.5 Km from River Palar and adjoining Chennai-Chittoor Bangalore Road (NH-4). Palar river is one of the major water sources running West to East located at downstream of the

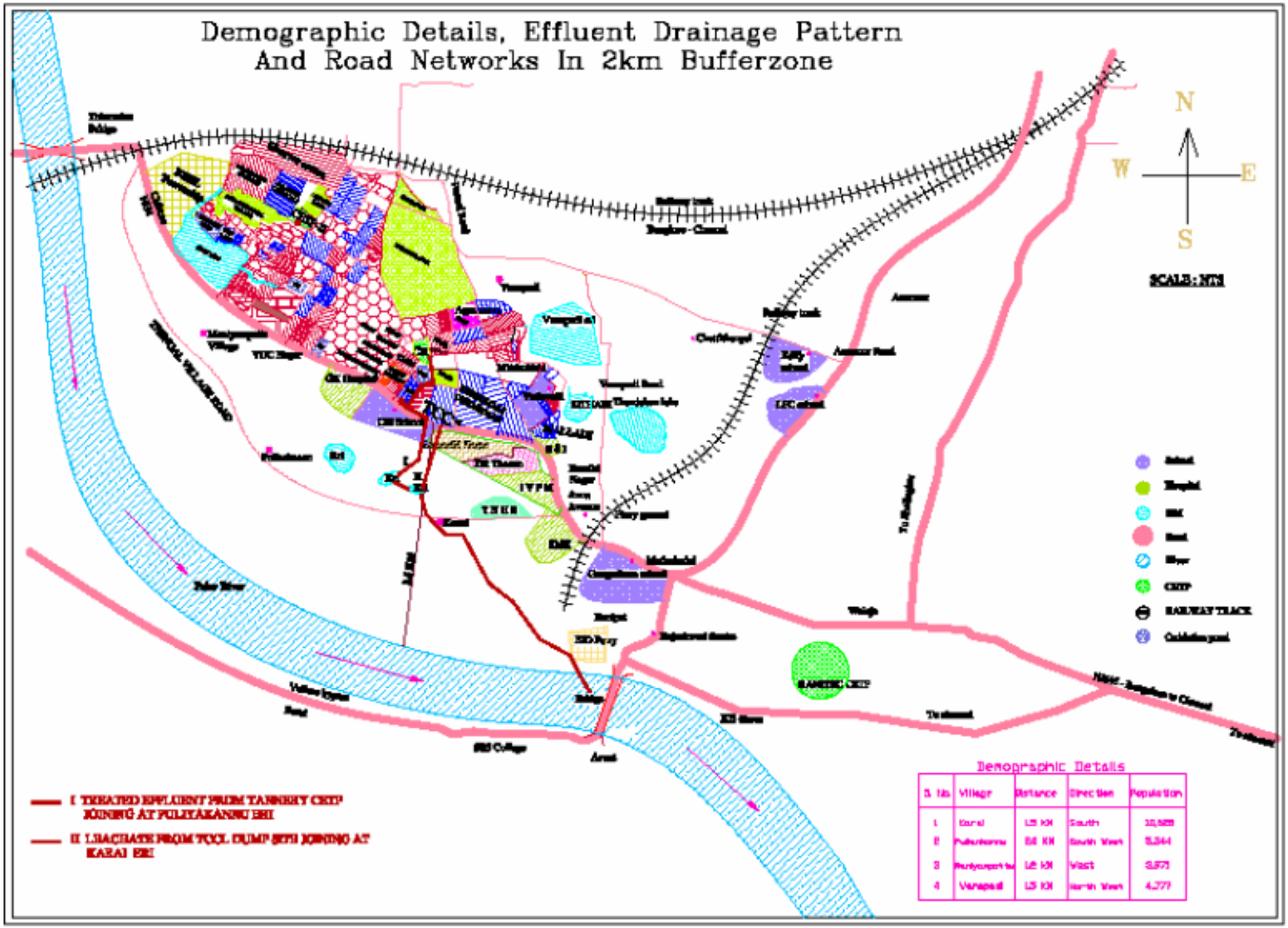
Industrial complex and other water bodies namely Puliyankannu and Karai Eri located in the down stream of the site.

1.3 Digitized map with demarcation of Geographical Boundaries and impact zones

Demarcation of critically polluted area at Ranipet in Vellore District

Demarcation of Critically polluted Area at SIPCOT industrial complex Phase I and II, Ranipet in Vellore District




Demographic Details, Effluent Drainage Pattern
And Road Networks In 2km Bufferzone
N
W
E
S
SCALE: NTS
Demographic Details
S. No.
Village
Distance
Direction
Population
1
Kurai
1.5 KM
South
10,505
2
Pulikkanmu
0.8 KM
South West
5,344
3
Pudiyanpattu
1.0 KM
West
3,571
4
Varapalli
1.5 KM
North West
4,777
I TREATED EFFLUENT FROM TANNERY CETP JOINING AT PULIYAKANNU ERI
II LEACHATE FROM TCCL DUMP SITE JOINING AT KARAI ERI

Demographic Details - Water drainage and road networks in 2km Buffer zone

The SIPCOT Industrial Complex Phase-I & Phase-II is located near Chennai-Chittoor-Bangalore Road (NH 4) and at a distance of about 3.5 km from river Palar. Palar river is running West to East and at the downstream of the industrial complex and the water drainage pattern is towards Southern direction from the industrial complex.

The following villages are located within 2 km of buffer zone.

Sl.No.	Name of the village	Direction in which located	Distance in KM	Population
1.	Karai	South	1.5	10628
2.	Maniyambatu	West	1.2	3971
3.	Puliankanu	South west	2	5344
4.	Vanapadi	North west	1.5	4777

1.4 CEPI Score (Air, Water, Land and Total)

The CEPI score for industrial area / clusters pertaining to Ranipet, Vellore

No	Industrial area/ cluster	Air	Water	Land	CEPI	
8	Ranipet, Vellore (Tamil Nadu)	69.25	65.25	62.50	81.79	Ac_Wc_Lc
Note : Ac - Air Critical : Wc - Water Critical : Lc - Land Critical :						

1.5 Total Population and Sensitive Receptors

The following villages/hamlets are located within 2 km of the impact zone.

S.No	Name of the village	Direction in which located	Distance in KM	Population in Numbers
1	Karai	South	1.5	10628
2	Maniyambatu	West	1.2	3971
3	Puliankanu	South west	2	5344
4	Vanapadi	North west	1.5	4777

There are 3 small hospitals, 12 no of Primary Schools and one Matriculation Higher Secondary School located within the impact zone of 2 Km.

1.6 Eco-Geological features

1.6.1 Major water bodies

River Palar is the major water body located at a distance of 3.5 km from the critical area. It originates in Nandidurg hills in Kolar district of Karnataka state and flows 93 km in Karnataka, 33 km in Andhra Pradesh and 222 km in Tamil Nadu before it confluences into the Bay of Bengal at Vayalur about 100 KM south of Chennai.

1.6.2 Ecological parks, Sanctuaries, flora and fauna or any ecosystem

Nil

1.6.3 Buildings or Monuments of historical/archaeological / religious importance:

Nil

1.7 Industry Classification (no. of industries per 10 sq. km area or fraction)

1.7.1 Highly polluting industries (17 categories)

Sl. No	Name and Address of the Industry	Type of Industry
1	Ranipet SIDCO Finished Leathers Effluent Treatment Co.Ltd., 199, SIDCO, Ranipet, Vellore District	Common Effluent Treatment Plant (CETP for 86 Tanneries)
2	SIPCOT-SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Co Ltd, 105, SIPCOT Phase II, Ranipet, Vellore District	Common Effluent Treatment Plant (CETP for 18 Tanneries)
3	Thirumalai Chemicals Ltd, 25B, SIPCOT Industrial Complex, Ranipet, Vellore District-632 403.	Petro Chemical
4	Malladi Drugs and Pharmaceuticals Ltd - Unit I 7C, SIPCOT Industrial Complex, Ranipet, Vellore District-632 403.	Bulk Drugs and Pharmaceuticals

5	Malladi Drugs and Pharmaceuticals Ltd-Unit III 7C, Sipcot Industrial Complex, Ranipet, Vellore District-632 403.	Bulk Drugs and Pharmaceuticals
6	SVIS Labs, 88,89, SIPCOT Phase II, Ranipet, Vellore District-632 403.	Bulk Drugs and Pharmaceuticals

1.7.2 Red Category Industries

There are 16 Numbers of Red Large/Medium category of industries falling under Chemical, Edible Oil Refinery, Ceramic and Clay products, Heavy Engineering and Foundry also located in the SIPCOT Industrial Complex, Ranipet.

Sl. No	Type of Industry	No of industries
1	Chemical	8
2	Edible oil refinery	1
3	Ceramic and Clay Products	2
4	Heavy Engineering	4
5	Foundry	1
	Total	**16**

Apart from this 107 No. of Red/Small industries mostly tanneries and other few types of industries such as chemicals, galvanizing, paint, rubber etc are located at the critical area.

1.7.3 Orange and Green Category Industries

There are 167 industries falling under Orange & Green category. Most of them are tannery dry processing units and other few types of industries such as light engineering, pulverizing, plastic product, leather board, etc are located at the critical area.

Sl. No	CATEGORY	LARGE	MEDIUM	SMALL	TOTAL
1	ORANGE	8	15	118	141
2	GREEN	0	0	26	26

1.7.4 Grossly Polluting Industries

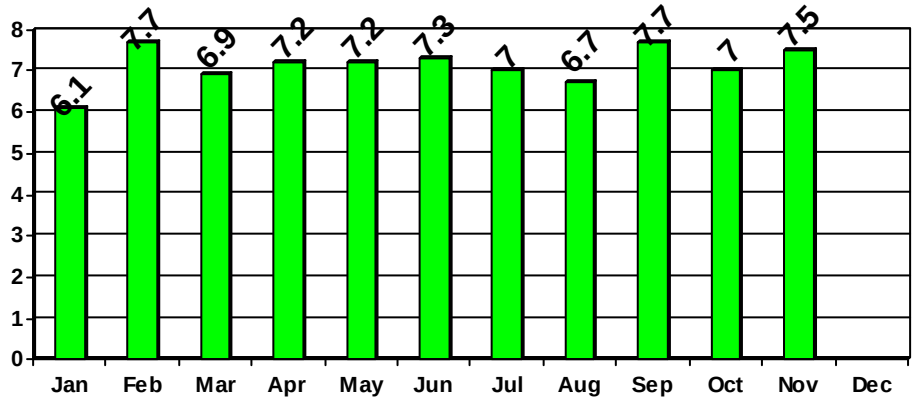
Nil

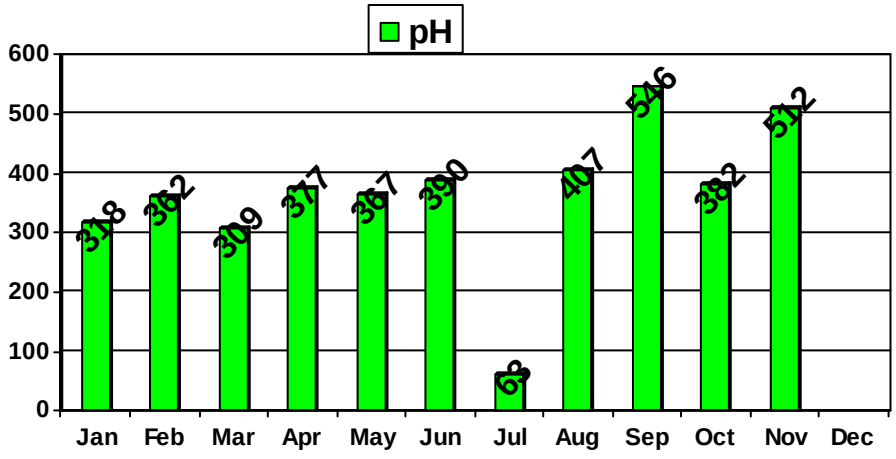
2.0 WATER ENVIRONMENT

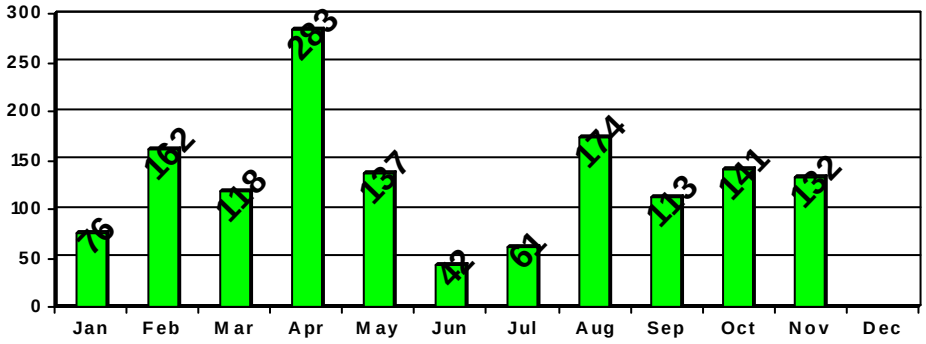
2.1 Present Status of Water Environment:

The report of analysis of ground water sample collected at down stream of SIPCOT Industrial complex at Walajah head works reveals that the values of TDS, chloride and hardness are exceeding the standard.

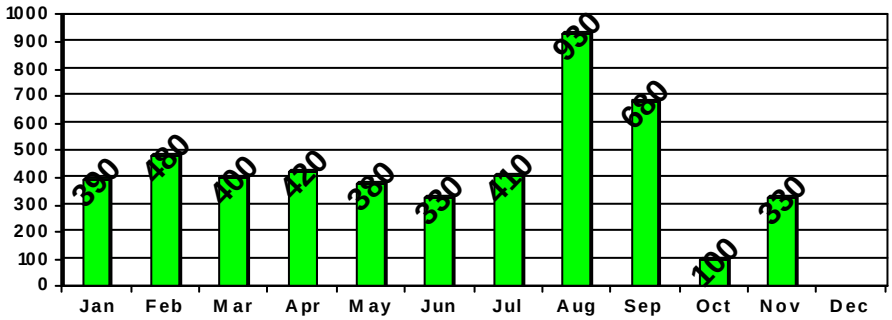
Report of analysis (trend analysis) of water samples collected from Walajah head works. (from Jan - 2009 – Dec 2009)



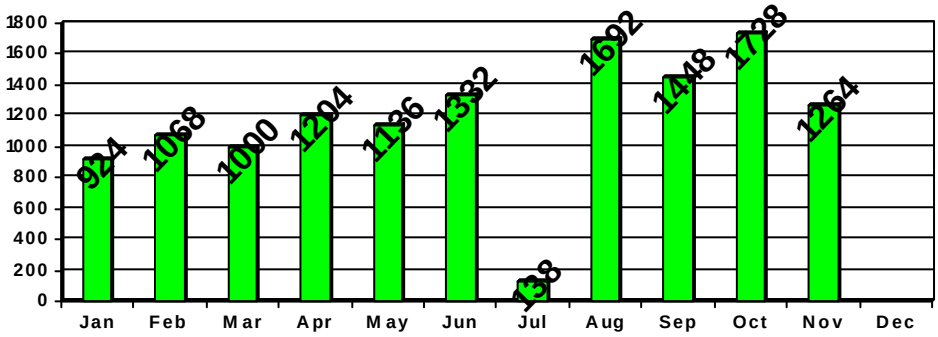




Sulphate mg/l



Total Hardness mg/l



TDS mg/l

2.1.1 Water bodies/Effluent receiving drain

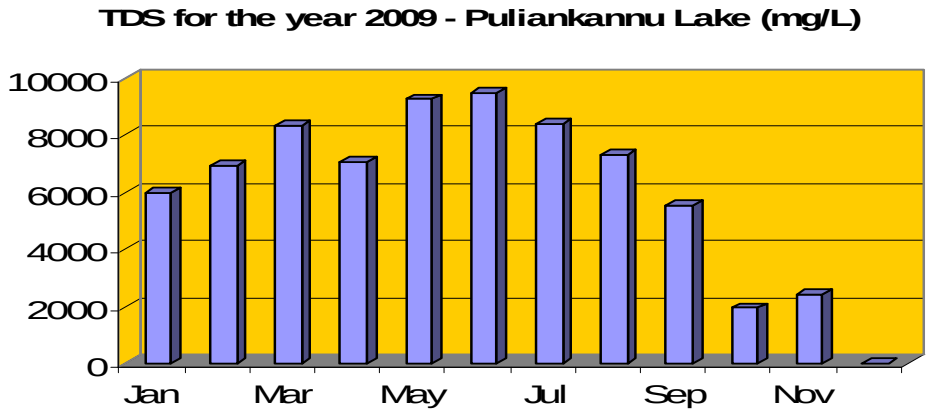
Puliyenkanu eri, karai Eri and River Palar are the important water bodies for water quality monitoring.

2.1.2 Present level of Pollutants in Water bodies/effluent receiving drains

The report of analysis of water sample collected at down stream of SIPCOT Industrial complex at Puliyenkanu Eri and Karai Eri reveals that the values of TDS is exceeding the limit due to the discharge of treated effluent from the two CETP for tanneries.

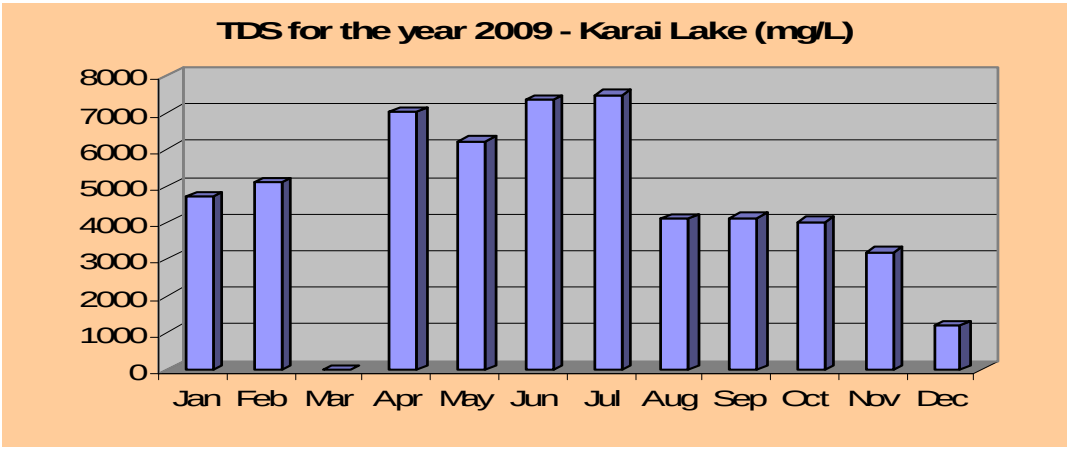
Value of TDS in the water sample collected from Puliankannu Lake, Ranipet

Note : The Treated effluent from the CETPs join in the lake



Value of TDS in the water sample collected from Karai Lake, Ranipet

Note : Overflow from Puliankannu Lake and TCCL leachate Join in the lake



2.1.3 Predominant sources contributing to various pollutants

The predominant sources contributing pollution are treated effluent from two CETP for tanneries and the leachate from the dump site of M/s. Tamil Nadu Chromates & Chemicals Ltd.,

2.2 Sources of Water Pollution

2.2.1 Industrial

M/s. Tamil Nadu Chromates & Chemicals Ltd. (TCCL), SIPCOT, Ranipet dumpsite and its impact

The chromium bearing dump site of M/s. Tamilnadu Chromates and Chemicals Limited (TCCL) is located at No.25, SIPCOT Industrial Complex, Ranipet, Walajah Taluk, Vellore District, Tamilnadu. The unit earlier manufactured (i) Sodium Bichromate 150 T/M, (ii) Basic Chromium Sulphate 300 T/M and (iii) Sodium sulphate 240 T/M and it generated about 32 T/day of Chromium bearing (both hexavalent and Trivalent) solid waste. Since the inception from the year 1975, the unit had functioned as a joint sector company promoted by TIDCO. From the year 1989 onwards, the unit functioned under various private managements. About 2.27 lakh tons of Chromium bearing solid waste got accumulated and dumped at the backyard of the unit's premises.

Figure 1 : View of Dumpsite at M/s TCCL, Ranipet

Land, soil, and ground water in the surroundings of the site have been contaminated with chromium. The waste pile covers about 2 Hectares in area, and in 3 to 5 metre height. The Geological Survey of India has reported that hexavalent chromium contamination had spread in the southern direction up to a distance of 2.0-2.5 Km. The factory is not in operation since 1995.

CHARACTERISTICS OF THE CHROMIUM BEARING SLUDGE

Sl No	Heavy Metal	Value in mg/kg
1	Total Chromium	19050
2	Hexavalent Chromium	190
3	Copper	BDL
4	Iron	34545
5	Magnesium	22582
6	Manganese	785
7	Nickel	332
8	Lead	1.5
9	Zinc	162

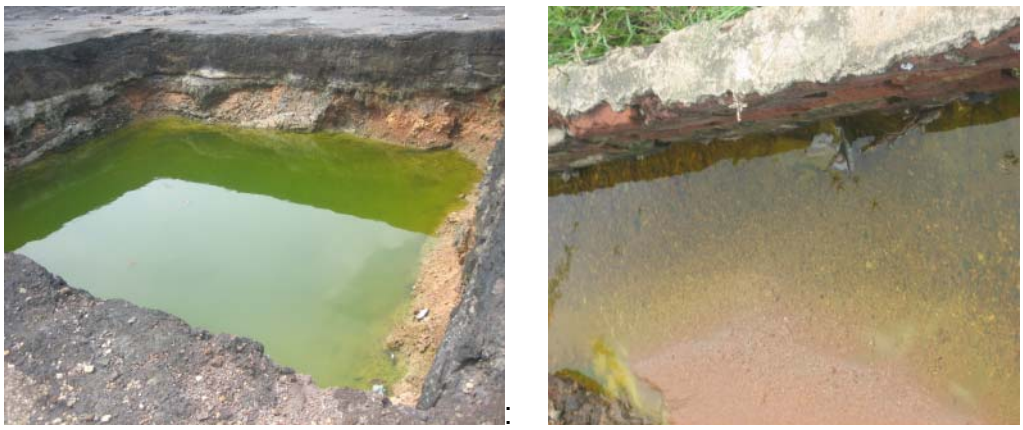
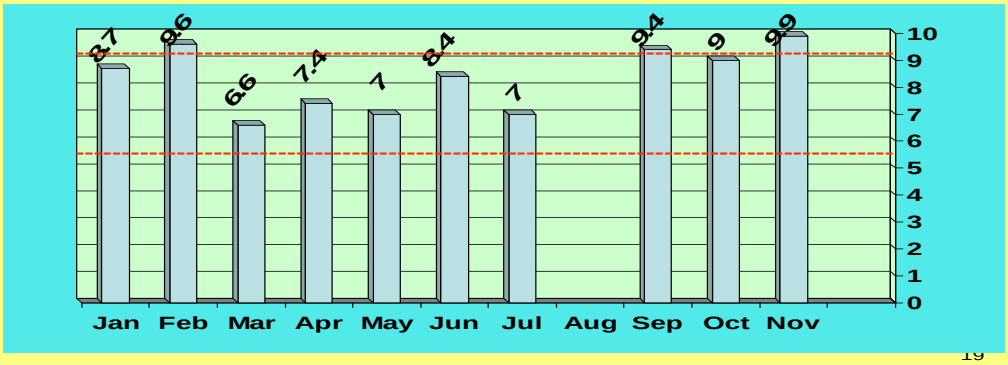


Figure 2: View of leachate at dumpsite of M/s TCCL, Ranipet

CHARACTERISTICS OF THE LEACHATE FROM THE DUMPSITE

Sl No	Parameter	**Value** (in mg/L except pH)
1	pH	12.04
2	TSS	14
3	TDS	2022
4	Chlorides	255
5	Sulphates	588
6	Oil and Grease	1.2
7	Hexavalent Chromium	60
8	Total Chromium	151 mg/L

REPORT OF ANALYSIS (TREND ANALYSIS) OF LEACHATE GENERATED FROM M/S TAMIL NADU CHROMATES AND CHEMICALS LTD, SIPCOT RANIPET. (From Jan - 2009 – Dec 2009) (Prescribed Limit for pH - 5.5 to 9.0)



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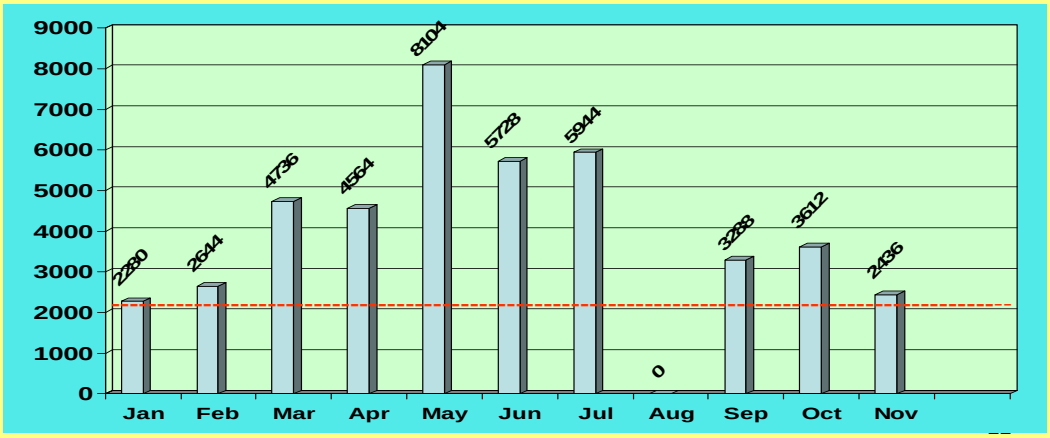
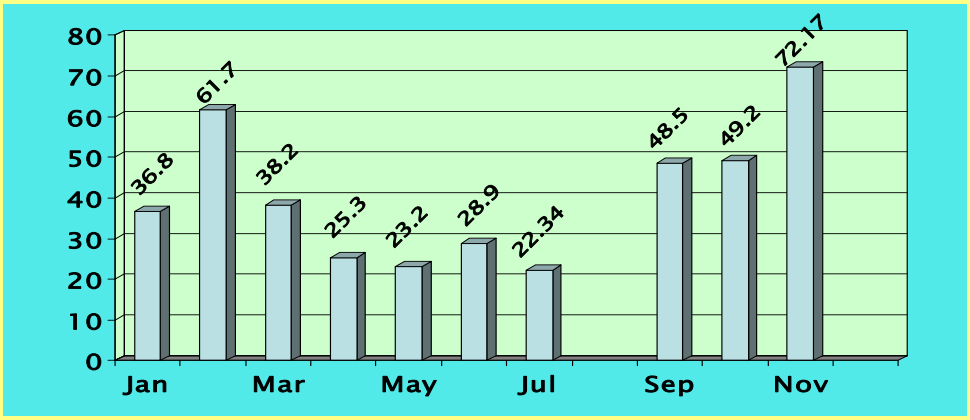
REPORT OF ANALYSIS (TREND ANALYSIS) OF LEACHATE GENERATED FROM M/S TAMIL NADU CHROMATES AND CHEMICALS LTD, SIPCOT RANIPET. (From Jan - 2009 – Dec 2009) (Prescribed Limit for TDS - 2100 mg/L)



REPORT OF ANALYSIS (TREND ANALYSIS) OF LEACHATE GENERATED FROM M/S TAMIL NADU CHROMATES AND CHEMICALS LTD, SIPCOT RANIPET. (From Jan - 2009 – Dec 2009) (Prescribed Limit for Cr+6 - 0.1 mg/L)



M/s Ranipet SIDCO Finished Leather Effluent Treatment Company Ltd, Ranipet

The CETP comprising of 86 tanneries is discharging the treated effluent into the water course with the TDS level of more than the limit of 2100 mg/L prescribed by the Board.

M/s. Ranipet SIDCO Finished Leather Effluent Treatment Co. Ltd., Ranipet

1	No of member units	86
2	Quantity of effluent treated	2500 KLD
3	Treatment system provided	Physico, Chemical and biological treatment

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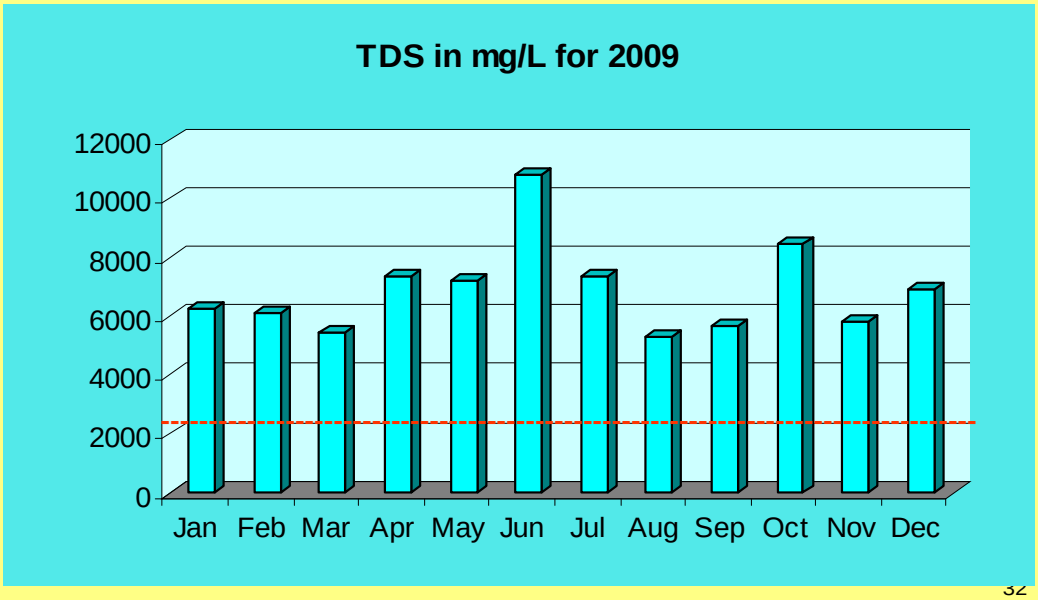
TDS value in samples collected from M/s Ranipet SIDCO Phase I-CETP



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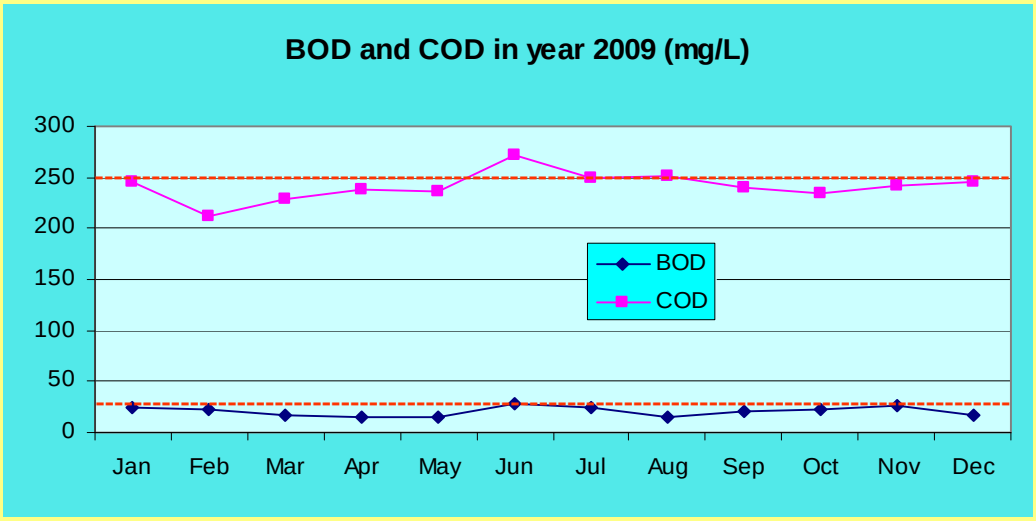
BOD and COD value in samples collected from M/s Ranipet SIDCO Phase I – CETP

(Prescribed Limit for BOD - 30 mg/L and for COD - 250 mg/L)



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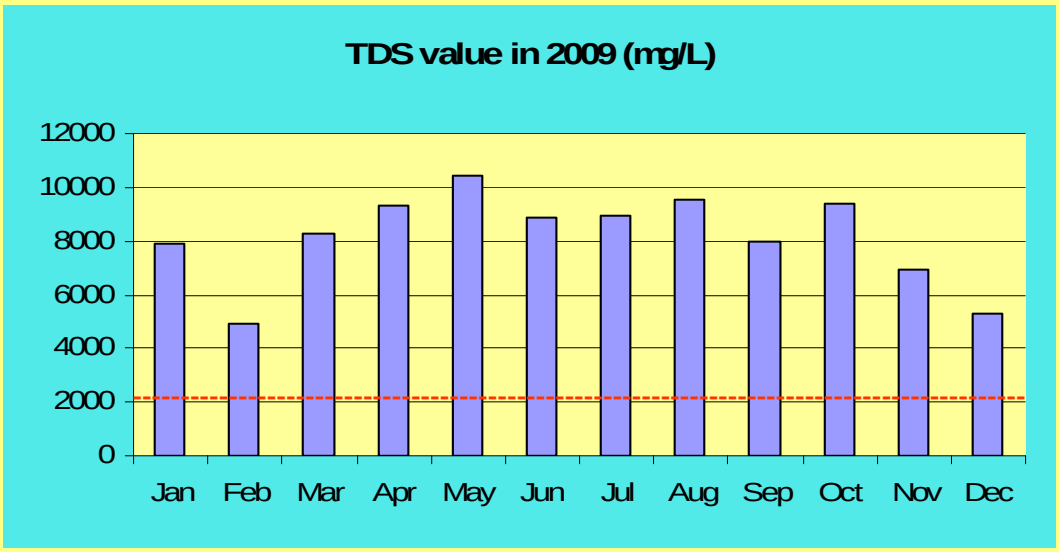
M/S.Sipcot - Sidco Phase II Entrepreneur Finished Leather Effluent Treatment company (P) Ltd, Ranipet.

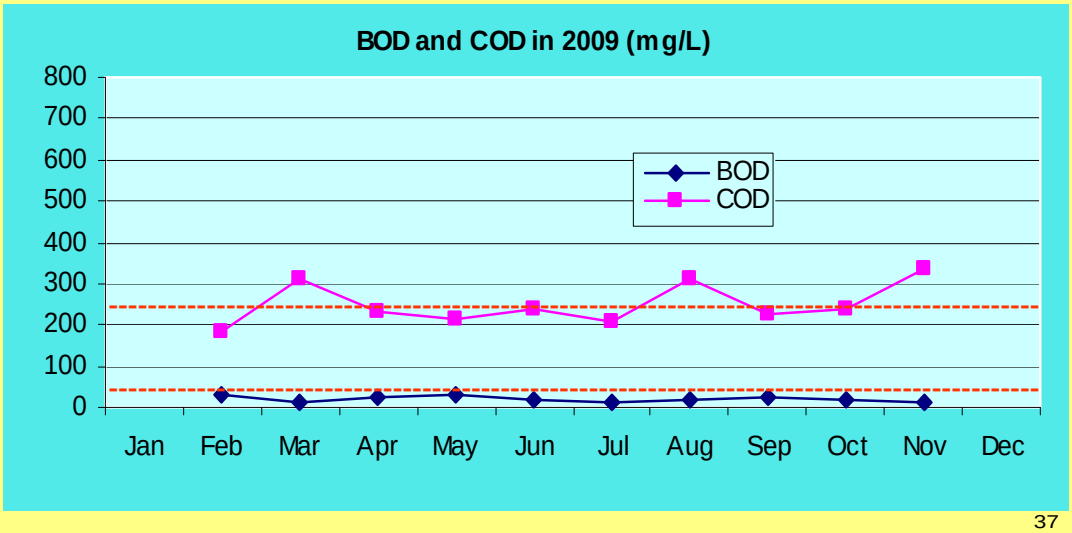
1	No of member units	18
2	Quantity of effluent treated	1560 KLD
3	Treatment system provided	Physico, Chemical and biological treatment

1

TDS value in samples collected from M/s Ranipet SIDCO Phase II-CETP
(Prescribed Limit for TDS = 2100 mg/L)



BOD and COD value in samples collected from M/s Ranipet SIDCO Phase II –CETP
(Prescribed Limit for BOD = 30 mg/L and for COD = 250 mg/L)



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2.2.2 Domestic

Domestic sewage generated from the industries in SIPCOT area is generally treated through septic tank arrangements and few major industries such as TCL,Greves cotton, Mitsubishi heavy industries, Cafoma autoparts, Sthall India have provided Sewage Treatment Plant and utilise the treated sewage for gardening.

2.2.3 Others (agricultural runoff, leachate from MSW dump, illegal dump site)

Nil

2.2.4 Impact on surrounding area (outside the CEPI area) on the water course drainage system of the area under consideration

Leachate of dump site of M/s Tamil Nadu Chromate and Chemicals (TNCC) Plant containing Hexavalent Chromium and the treated trade effluent from two CETPs for tanneries located at SIPCOT area are discharging high TDS waste water outside on land have impact over land and ground water.

There are 10 CETPs for tanneries in Vellore district out of which 2 CETPs are located in critically polluted area at SIPCOT Industrial Complex, Ranipet. Out of the remaining 8 CETPs 2 CETPs are located in V.C.Mottur village at about 5 KM downstream of the critically polluted area and one CETP in Melvisharam at about 10 KM upstream and one CETP in Pernambut at about 60 KM and two CETPs in Ambur at about 70 KM and two CETPs at Vaniyambadi at 85 KM from the critically polluted area. Hence, there is no impact on the critically polluted area due to the functioning of these 8 CETPs. However, all the CETPs are implementing Zero Liquid Discharge system comprising of R.O. Plant with Reject Management System.

Sl. No	Name of the CETP	No. of members	Capacity of ZLD system KLD	Status of installation of ZLD system
1	M/s.Vaniyambadi Tanners Enviro Control System Ltd, Valayampet Sector	110	4000	Common RO plant with Reject Management System Installed for this two CETPs at Valayampet Sector.It is under trial run and Expected to commission before Dec-2010
2	M/s.Vaniyambadi Tanners Enviro Control System Ltd, Udayendiram Sector	10		
3.	M/s.Ambur Tannery Effluent Treatment Plant Co, Thuthipet sector	57	2400	RO plant with Reject Management System installed and under trial run. Expected to commission before Dec-2010
4.	M/s Ambur Tannery Effluent Treatment Plant Co, Maligaithoppu sector	12	800	RO plant with Reject Management System installed and under trial run. Expected to commission before Dec-2010
5.	M/s Ranipet Tannery Effluent Treatment Co Ltd, Ranipet	77	3000	Common RO plant with Reject Management System Installed for this two CETPs. Installation work is under progress and expected to commission before March-2011
6.	M/s Melvisharam Tanneries Effluent Treatment Co. Pvt. Ltd, Melpudupet.	8		
7.	M/s Ranipet SIDCO Finished Leather Effluent Treatment Co. Ltd, Ranipet.	86	2500	The installation of RO plant with Reject Management System work is under Progress. Expected to commission before March-2011

8.	M/s SIPCOT and SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Co. Ltd. Ranipet, Vellore District.	18	1000	The installation of RO plant with Reject Management System work is under Progress. Expected to commission before March-2011
9.	M/s Visharam Tanners Enviro Control System Ltd, Melvisharam.	18	800	RO plant with Reject Management System installed and under trial run. Expected to commission before Dec-2010
10.	M/s.Pernambut Tannery Effluent Treatment Company (P) Ltd. Bakkalapalli sector	36	1000	The installation of RO plant with Reject Management System work is under Progress. Expected to commission before March-2011

2.3 Details of Water Polluting Industries in the area/Cluster

The leachate from the dump site of M/s. Tamil Nadu Chromates & Chemicals Ltd and two CETPs for tanneries and one Petrochemical, two Bulk drugs&pharmaceuticals, two chemicals are the major Water polluting industries in the SIPCOT Industrial complex.

S.No	Name of Industry	Category
1	Tirumalai Chemicals Ltd	Petrochemical
2	Malladi drugs & Pharmaceuticals Ltd-I	Bulk drugs&pharmaceuticals
3	Malladi drugs & Pharmaceuticals Ltd-III	Bulk drugs&pharmaceuticals
4	Ultramarine and Pigments Ltd	Chemical
5	Stall India(P) Ltd	Chemical
6	Ranipet SIDCO Finished Leathers Effluent	CETP for Tannery

	Treatment Co Ltd(Phase-I)	
7	SIPCOT-SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Co Ltd,	CETP for Tannery

2.4 Effluent Disposal Methods-Recipient water bodies

Sl No	Name of the industry	Type	Effluent in KLD	Treatment system provided	Disposal Methods / Recipient water bodies
1	M/s Thirumalai Chemicals Limited	Petro chemical	220	Physical, Chemical and biological Treatment, RO Plant, accelerated solar evaporation pans	ZLD System Provided
2	M/s Malladi Drugs and Pharmaceuticals Ltd, Unit-I	Bulk drugs and Pharmaceutical	120	Primary treatment, Bio-reactor, R O plant, Multiple effect evaporator and Bio-composting	ZLD System Provided
3	M/s Malladi Drugs and Pharmaceuticals Ltd, Unit-III	Bulk drugs and Pharmaceutical	11	Physical and Chemical, Multiple effect evaporator	ZLD System Provided
4	Ultramarine and Pigments Ltd	Chemicals	9.1	Physical and Chemical, R O	ZLD System Provided

				plant, evaporator	
5	Sthall India(P) Ltd	Chemicals	24	Physical and Chemical and biological treatment	Treated water utilized for green belt development
6	Ranipet SIDCO Finished Leathers Effluent Treatment Co Ltd(Phase-I)	CETP-Tannery-86	2500	Physico, Chemical and biological treatment	Puliyenkanu Eri
7	SIPCOT-SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Co Ltd,	CETP-Tannery-18	1560	Physico, Chemical and biological treatment	Puliyenkanu Eri

2.5 Quantification of wastewater pollution load

Year	Ranipet SIDCO Finished Leathers Effluent Treatment Co Ltd(Phase-I)			SIPCOT-SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Co Ltd,		
	BOD (Kg/day)	COD (Kg/day)	TDS (Kg/day)	BOD (Kg/day)	COD (Kg/day)	TDS (Kg/day)
2009	51.40	552	17245	44.15	539	12645

2.6 Action plan for compliance and control of Pollution

2.6.1 Existing infrastructure facilities

The industries located in the cluster other than tanneries which are causing water pollution have provided with appropriate waste water treatment system. The operation and performance of these systems are periodically

monitored by the officials of the TNPCB and their compliance with the conditions imposed in the consent orders are checked.

The physio-chemical and biological treatment systems provided either collectively or individually by the tanneries are not able to contain the TDS and its related parameters to the norms prescribed by the TNPC Board. The value of TDS in the effluent discharged from the CETPs is ranging from 4500- 18000 mg/litre as against the prescribed norms of 2100 mg/litre and the effluent thus discharged pollute the receiving water bodies and land. The Tamilnadu Pollution Control Board has directed all the Common Effluent Treatment Plants to implement zero discharge effluent treatment system comprising RO plant with reject management system.

2.6.2 Pollution Control measures installed by industries

Sl No	Name of the industry	Type	Treatment system provided
1	M/s Thirumalai Chemicals Limited	Petro chemical	Physical, Chemical and biological followed by ZLD system
2	M/s Malladi Drugs and Pharmaceuticals Ltd, Unit-I	Bulk drugs and Pharmaceutical	Primary treatment, Bio-reactor, R O plant, Multiple effect evaporator and Bio-composting
3	M/s Malladi Drugs and Pharmaceuticals Ltd, Unit-III	Bulk drugs and Pharmaceutical	Physical and Chemical, Multiple effect evaporator followed by ZLD system
4	Ultramarine and Pigments Ltd	Chemicals	Physical and Chemical followed by ZLD system
5	Sthall India(P) Ltd	Chemicals	Physical, Chemical and biological treatment.
6	Ranipet SIDCO Finished Leathers Effluent Treatment Co Ltd(Phase-I)	CETP-Tannery-86	Physical, Chemical and biological treatment.The installation of ZLD System is under progress.

7	SIPCOT-SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Co Ltd,	CETP-Tannery-18	Physical, Chemical and biological treatment.The installation of ZLD System is under progress.

2.6.3 Technological Intervention

i) Zero effluent discharge system

Sl No	Name	Action proposed	Cost In Cr
1	Ranipet SIDCO Finished Leathers Effluent Treatment Co Ltd(Phase-I)	RO Plant & Multiple Effect evaporator	29.19
2	SIPCOT-SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Co Ltd	RO Plant & Multiple Effect evaporator	17.33

ii) Containment Plan for dump site at M/s TCCL

TNPCB has submitted the proposal to get fund Rs.80.36 Crores from World Bank through MoE&F under Capacity building Industrial pollution management Programme.

2.6.4 Infrastructural Renewal

2.6.4.1 Details of existing infrastructure facilities

The SIPCOT industrial complex has the following infrastructure such as i) Water supply from head works at Palar river and 16 bore wells at Thengal village adjacent to the river Palar. ii) Roads - Length of 13.75 Km. iii) Oxidation ponds - 11 Nos. Apart from these a Post office, Fire station, Police station, Bank, School, ESI dispensary & Canteen are being operated in this area.

2.6.4.2 Need of upgradation of existing facilities

- Adequate storm water drains to be provided within SIPCOT area.

- Existing storm water drains within SIPCOT area to be renovated & de silted by SIPCOT authorities.
- SIPCOT existing service road to be repaired and maintained.
- Existing sewer lines and oxidation ponds to be renovated by SIPCOT authorities.

2.6.4.3 Installation of Gen sets at CETPs

In order to avoid overflow of untreated effluent during power failure, all the CETPs in Vellore district have provided Diesel Generator set arrangement at all pumping stations.

The details are given below:

Sl. No	Name of CETP	No. of pumping stations	D.G. Set capacity
1	Ranipet SIDCO Finished Leather Effluent Treatment Company Ltd., Ranipet	1	50KVA
2	SIPCOT-SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Company (P)Ltd	1	75 KVA
3	Ranipet Tannery Effluent Treatment Company Ltd, Ranipet	2	50, 75 KVA
4	Melvisharam Tanners Effluent Treatment Company Ltd., Melpudupet Sector, Ranipet	1	25 KVA
5	Visharam Tanners Enviro Control Systems (P) Ltd Melvisharam., Vellore District	2	62.5, 10 KVA
6	Vaniyambadi Tanners Enviro Control Systems Ltd Valayampet Sector, Vaniyambadi	4	62.5 -3 Nos. 380 KVA
7	Vaniyambadi Tanners Enviro Control Systems Ltd Udayendiram Sector, Vaniyambadi	1	62.5 KVA

8	Ambur Tannery Effluent Treatment Co., Ltd Maligaithope Sector, Ambur	No pumping station. Gravity flow	
9	Ambur Tannery Effluent Treatment Co. Ltd Thuthipet Sector, Ambur	1	7.5 KVA
10	Pernambut Tannery Effluent Treatment Co. Ltd Bakkalapalli Sector, Pernambut	No pumping station. Gravity flow	

2.6.5 Impact on CEPI score after installation of full fledged pollution control measures.

Water

Score A

Pollutants Category

BOD B

F- B

$No._3$ A

Considering penalty value, factor A1=3

Considering the scale of industrial activity factor $A_2 = 5$

⁂ A = 3x5 = 15

Score B

Pollutants	Average Concentration *	Exceedence Factor
BOD	8.6	1.72
F-	0.85	0.57
No_3	20	1.33

*Source VIMTA report by CPCB, Annexure I – Table 2

**BOD : COD ratio is taken as 1:2.5

B1=7.75

B2 = 4.5 (Symptoms of exposure on people)

B3=3 (Symptoms of exposure on Eco-geological features)

⁂ B= 7.75+4.5+3 = 15.25

Score C

Population exposed is between 10,000 to 1,00,000

C1=3

Pollutants	Samples Exceeded/Total No. of Samples x EF	SNLF
BOD	2/2x1.72	1.72
F-	0/2x0.57	0
No_3	2/2 x1.33	1.33

C2=3

C3=5 (Risk Sensitive receptors = Yes)

⁂ C = 3x3+5 = 14

D=15 (Inadequate facilities for Small/Medium Scale Industries and common Facilities)

A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	Water CEPI
3	5	15	7.75	4.5	3	15.25	3	3	5	14	15	59.25

2.6.6 Self monitoring system in industries

- Laboratory facility provided by the units to monitor the pH, TDS, Chlorides, COD, BOD.
- Electromagnetic flow meters are provided by the units to monitor the flow of trade effluent.

2.6.7 Data linkages to SPCB (of monitoring devices)

The Two CETPs for tanneries have to connect the EMFM attached to RO plant and RO reject real time on line data to Care Air Centre at Board office after the commissioning of Zero effluent discharge system.

2.6.8 Managerial and Financial Plan

Tamil Nadu Pollution Control Board has prepared a project proposal on the remediation of the contaminated site of M/s. Tamil Nadu Chromates & Chemicals Ltd., at SIPCOT Industrial Complex, Ranipet with the cost estimate of Rs.80.36 Crores for World Bank funding under Capacity Building Industrial Pollution Management Programme which is assisted by the World Bank through MoEF, Government of India.

The two CETPs located at the critically polluted area are installing R.O. Plant with Reject Management system at a total project cost of Rs. 46.52 Crores out of which the Central subsidy is Rs. 23.25 Crores and State subsidy is Rs. 6.98 Crores and the balance amount by the contribution by the member units.

3.0 AIR ENVIRONMENT

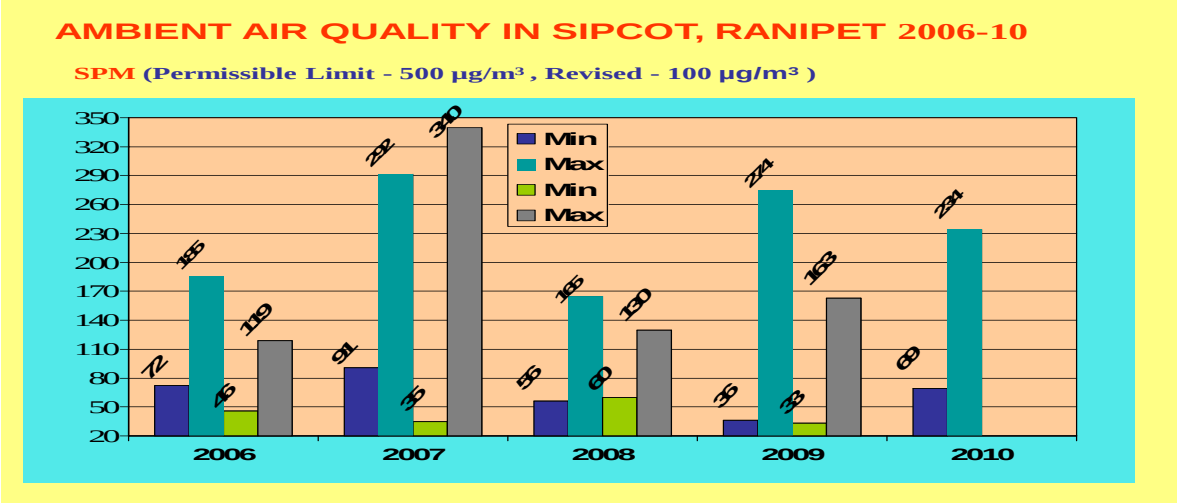
3.1 Present status of Air Environment

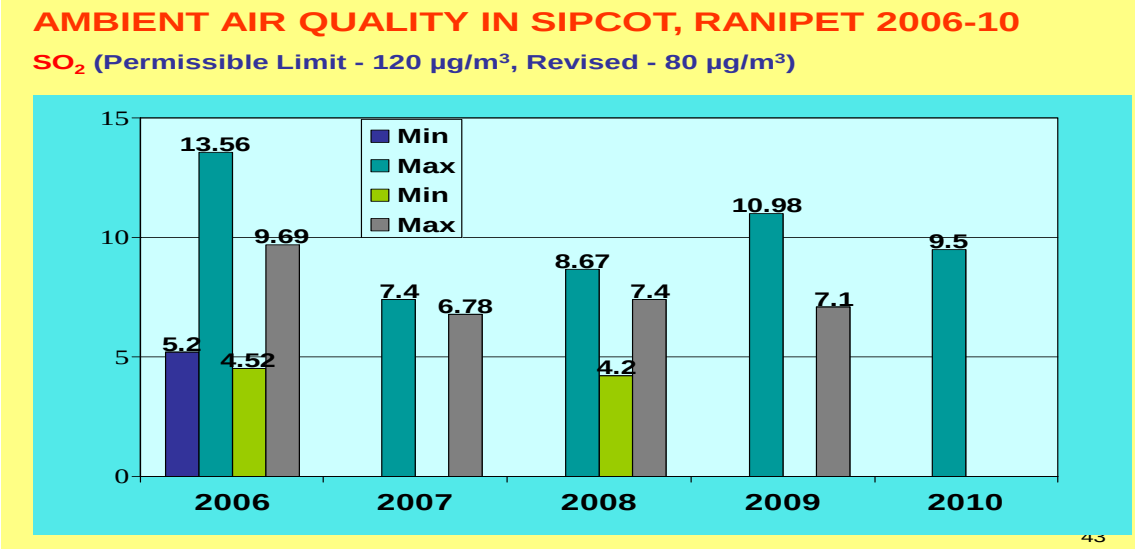
The Ambient Air Quality survey reports for the period 2007 to 2009 reveals that the level of SPM, SO2 and NOx are within the limits prescribed by the Board.

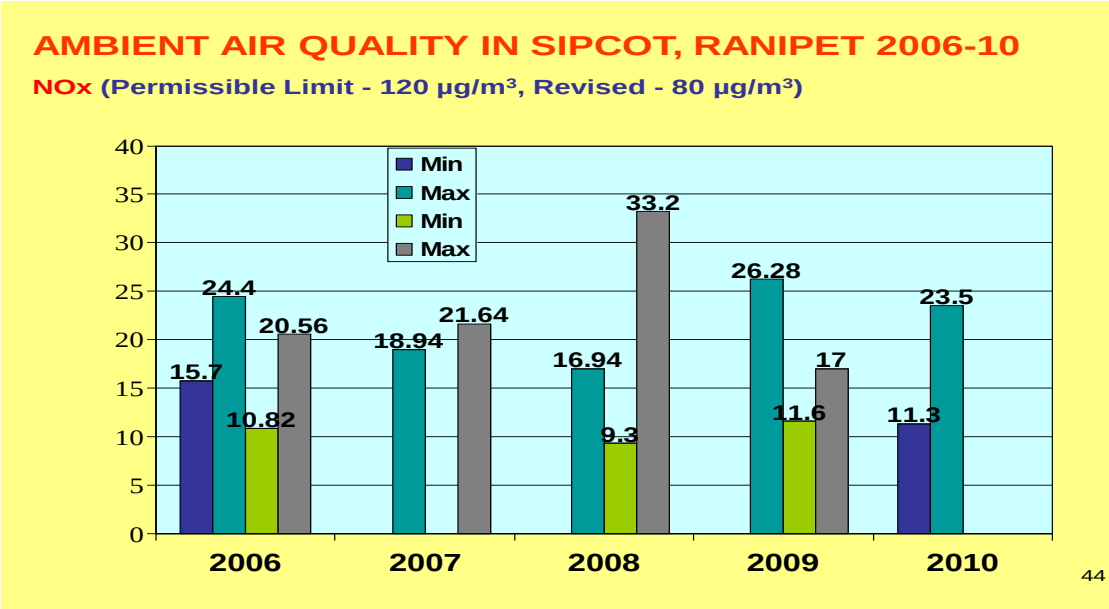
3.1.1 Critical locations for air quality monitoring

Critical location for air quality monitoring are Malladi drugs Unit-I, Thirumalai Chemicals Ltd, Malladi drugs Unit-III, Ultramarine & Pigments Ltd, & Sviss Labs Ltd.

3.1.2 Present level of pollutants in Air







AMBIENT AIR QUALITY IN SIPCOT, RANIPET FOR THE YEAR 2009-2010

Sl. No	Name of the Industry	2009-2010					
		Concentration of pollutant µg/m3					
		SPM		SO2		Nox	
		Min	Max	Min	Max	Min	Max
1	THIRUMALAI CHEMICALS	33	163	<4	7	12	17
2	MALLADI DRUGS, UNIT 1	41	204	<4	7	14	26
3	MALLADI DRUGS, UNIT 3	74	146	<4	9	12	32
4	ULTRAMARINE PIGMENTS	52	121	<4	16	12	32
5	CARBORANDUM UNIVERSAL	108	152	5	12	15	35
6	SVIS LABS	74	87	<4	10	<9	23

3.1.3 Predominant sources contributing to various pollutants:

The predominant sources contributing to various pollutants in SIPCOT Industrial area are from one Petrochemical, three Bulk Drugs & Pharmaceuticals and one Chemical Unit.

3.2 Sources of Air Pollution

The sources of air pollution are mainly from 17 categories of industries in SIPCOT industrial area and one chemical unit.

Other large and medium scale industries have provided adequate Air pollution Control measure such as bag filters, Wet scrubbers and adequate height of stack.

3.3 Details of Air Polluting Industries in the area/Cluster

The major Air Polluting Industries in the area are one Petrochemical, one chemical, three Bulk drugs & pharmaceuticals industries located in this cluster

S.No	Name of Industry	Category
1	Tirumalai Chemicals Ltd	Petrochemicals
2	Malladi drugs & Pharmaceuticals Ltd-I	Bulk Drugs and Pharmaceuticals
3	Malladi drugs & Pharmaceuticals Ltd-III	Bulk Drugs and Pharmaceuticals
4	Ultramarine and Pigments Ltd	Chemicals

5	Sviss Labs Ltd.	Bulk Drugs and Pharmaceuticals

3.4 Impact of activities of near by area on CEPI area.

Nil

3.5 Quantification of air pollution load

The pollution load of SPM, SO_2 & NO_x let out through different source of industries is tabulated below. The details are given based on the stack monitoring reports of industrial units conducted by TNPCB.

Year	Industries	SPM Kg/day	SO_2 Kg/day	NO_x Kg/day
2009	Tirumalai Chemicals Ltd	61.84	34.98	4.07
2009	Malladi drugs & Pharmaceuticals Ltd-I	12.19	36.78	0.30
2009	Malladi drugs & Pharmaceuticals Ltd-III	4.60	21.86	0.20
2009	Ultramarine and Pigments Ltd	36.08	180.90	1.44

3.6 Action plan for compliance and control of Pollution

3.6.1 Existing infrastructure facilities – Ambient air quality monitoring net work

High volume samplers are installed by major units to monitor ambient air quality. VOC monitors are provided at Tirumalai Chemicals Ltd, Malladi drugs & Pharmaceuticals Ltd-I, Malladi drugs & Pharmaceuticals Ltd-III and Svis Lab.

TNPC Board Laboratory at Vellore conducts regular monitoring of AAQ/Stack emission survey in the all major units.

3.6.2 Pollution control measures installed by the individual sources of pollution

Pollution control measures installed by the individual sources of pollution. Wet scrubbers are provided to scrub the gas emission let out from process, dust collection system such as bag filters, cyclone separators are provided to control the fugitive emission let out from plant operations.

S.No	Name of Industry	Category	APC Measures Provided.
1	Tirumalai Chemicals Ltd	Petrochemicals	Wet Scrubber, Condensers, Cyclone separator with Dust collectors.
2	Malladi drugs & Pharmaceuticals Ltd-I	Pharmaceuticals	Wet Scrubber, Dust collectors.
3	Malladi drugs & Pharmaceuticals Ltd-III	Pharmaceuticals	Wet Scrubber, Dust collectors.
4	Ultramarine and Pigments Ltd	Chemicals	Wet Scrubber, Dust collectors.
5	Sviss Labs Ltd.	Pharmaceuticals	Wet Scrubber, Condenser, Dust collectors.

3.6.3 Technological Intervention

3.6.3.1 Inventorisation of prominent industries with technological gaps

Nil

3.6.3.2 Identification of low cost and advanced cleaner technology for air pollution control

Nil

3.6.4 Need for infrastructure renovation

3.6.4.1 Development of roads

SIPCOT existing service road to be repaired and maintained.

3.6.5 Impact on CEPI score after installation / commissioning of full fledged air pollution control system

AIR

Score A

Pollutants	Category
Benzene	C
Pb	C
C0	B

Considering penalty value, factor A1=5.75

Since the scale of industrial activities comes under >$2R_{17}$+$10R_{54}$ per $10KM^2$ area or fraction,

Factor A2=5

⁂ A = 5.75x5= 28.75

Score - B

Pollutants	Average Concentration *	Exceedence Factor
Benzene	6.05	1.21
Pb	0.195	0.39
Co	0.4	0.2

* Source :VIMTA report by CPCB, Annexure I – Table 1

B1= 3 (Exceedence factor is between 0.5 and 1.5)

B2 = 3 (Reliable evidence of Symptoms of exposure on People)

B3= 0 (Symptoms of exposure on Eco-geological features)

⁂ B= 3+3+0 = 6

Score - C

Population Exposed is between 10,000 to 1,00,000

C1=3

Pollutants	Samples Exceeded / Total No. of Samples x EF	SNLF
Benzene	2/2x1.21	1.21
Pb	0/2x0.39	0
Co	0/2x0.2	0

C2=3

C3=5 (Risk to sensitive receptors = Yes)

⁂ C = 3X3+5 = 14

Score D= 5

A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	Air CEPI
5.75	5	28.75	3	3	0	6	3	3	5	14	5	53.75

3.6.6 Self monitoring system in Industries (Stacks & APCDs)

High volume samplers are installed by major units to monitor ambient air quality. VOC monitors are provided at Tirumalai Chemicals Ltd, Malladi drugs & Pharmaceuticals Ltd-I, Malladi drugs & Pharmaceuticals Ltd-III and Svis Lab.

3.6.7 Data Linkages to SPCB/CPCB (of monitoring devices)

Tamil Nadu Pollution Control Board has formed a CARE Air Centre at the Corporate Office for the continuous monitoring of the Ambient Air Quality and the stack emissions of the 17 Category industries in Tamil Nadu.

The following 17 category of industries located in critically polluted area are in the process of connecting their online monitoring system to the CARE Air Centre of TNPCB.

S.No.	Name of the industry	Online monitoring systems proposed
1	M/s. Thirumalai Chemicals Ltd, SIPCOT Industrial Complex, Ranipet	Online monitoring system for CO,VOC to be connected
2	M/s. Malladi Drugs & Pharmaceuticals Ltd Unit I, SIPCOT Industrial Complex, Ranipet	Online monitoring system for VOC to be connected
3	M/s. Malladi Drugs & Pharmaceuticals Ltd, Unit III,SIPCOT Industrial Complex, Ranipet	Online monitoring system for VOC to be connected
4	M/s. SVIS Labs Ltd., SIPCOT Industrial Complex, Ranipet	Online monitoring system for VOC to be connected

4.0 Land Environment (soil and ground water)

4.1 Soil Contamination

4.1.1 Present status of land environment:

Generally the area soils are poor in fertility level and alkali in reaction and the pH values vary from 8 to 9.3 with high amounts of dissolved salts concentrations and EC Values 7.21 milli-mhos/cm.

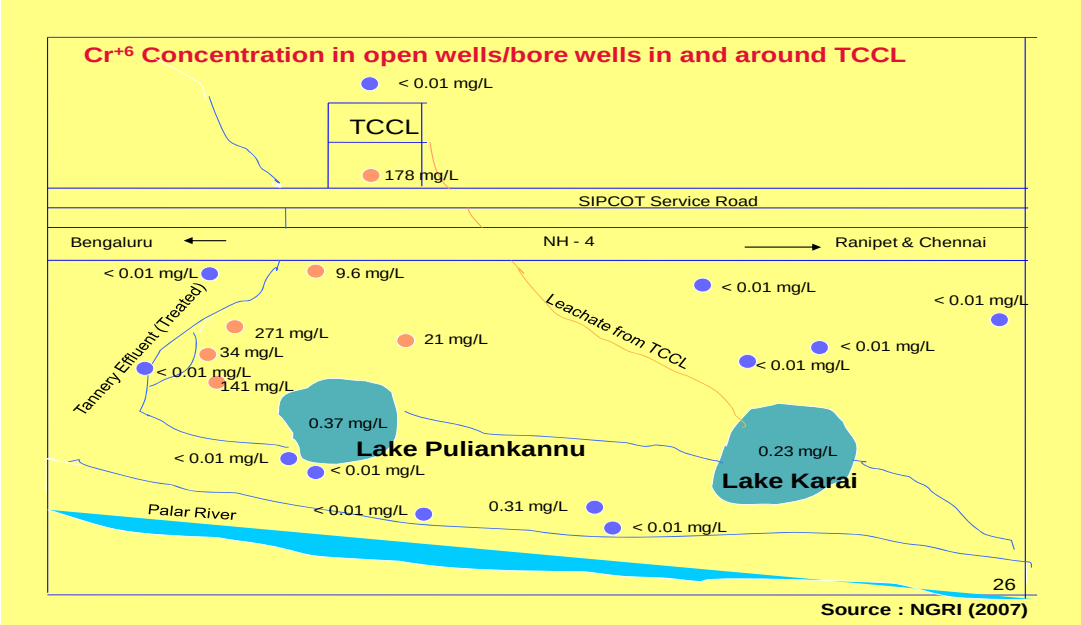
S.No.	Location	pH	Soluble salt EC milli mhos/cm
1	Mugundarapuram(hill foot area	8.0	0.09
2	Agraharam	9.3	0.63
3	Puliyankkanu(North side of the Road	8.5	7.21
4	Puliyankkanu(South side of the Road	8.8	2.27

4.1.2 Critical locations for land/soil pollution assessment and ground water

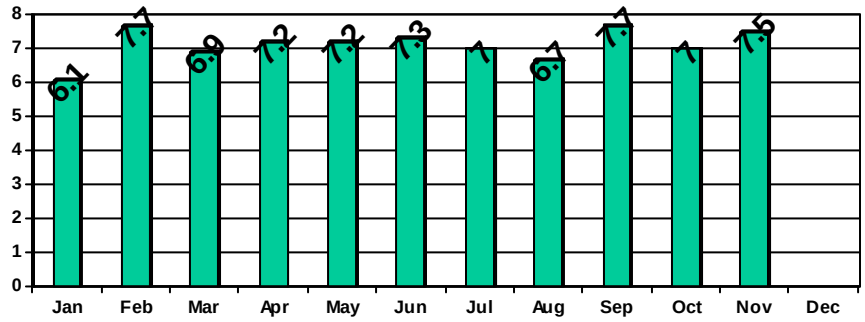
Down stream of M/s Tamil Nadu Chromate and Chemicals (TNCC) Plant containing Hexavalent Chromium and the treated trade effluent from two CETPs for tanneries located at SIPCOT area are discharging high TDS waste water outside on land have impact over land and ground water.

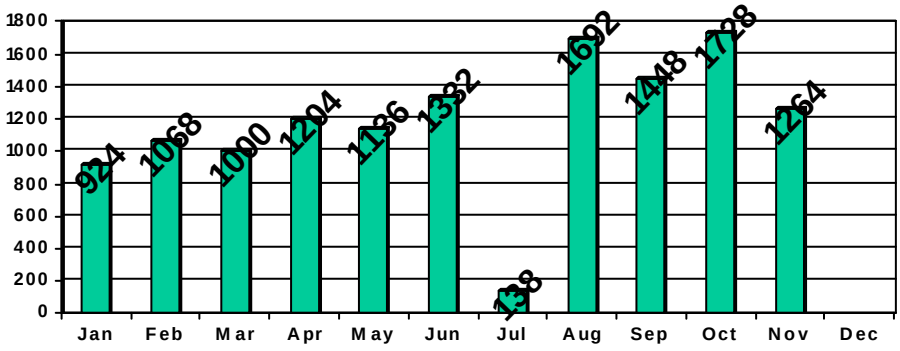
4.1.3 Present level of pollutants in land, soil and ground water

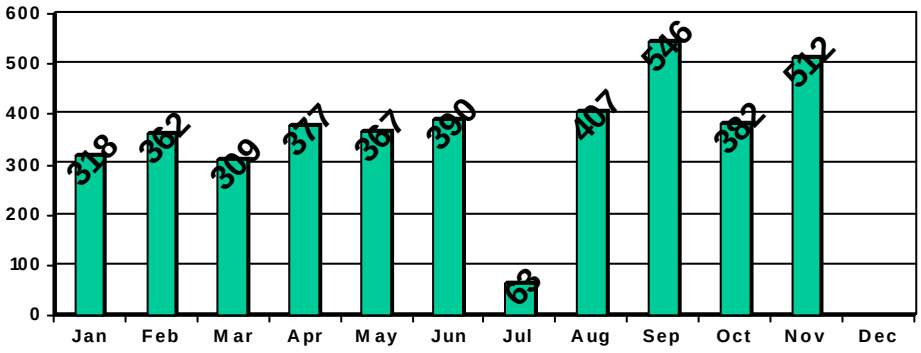
Cr^{+6} level concentrations in open well/bore well in and around TCCL is shown in the following figure.



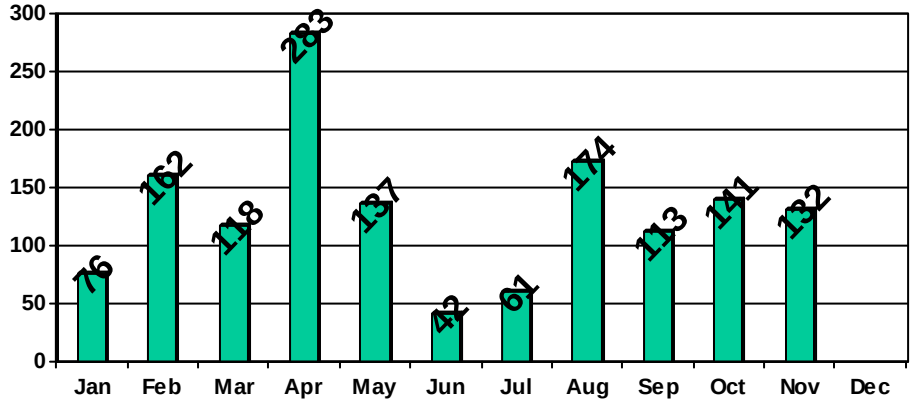
Report of analysis (trend analysis) of water samples collected from Walajah head works. (From Jan - 2009 – Dec 2009)



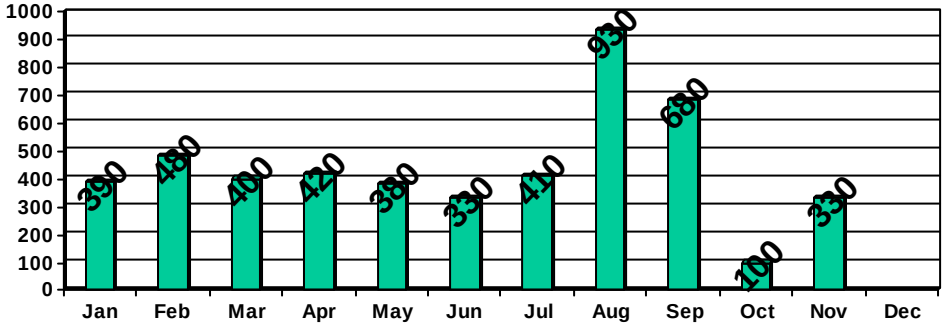




Chloride mg/l



Sulphate mg/l



Total Hardness mg/l

4.1.4 Predominant sources contributing to or posing danger of pollution of land and ground water

a) Dumpsite of M/s Tamil Nadu Chromate and Chemicals (TNCC) Ltd.

A serious Soil, Water and ground water pollution problem exists at the Tamil Nadu Chromate and Chemicals (TNCC) Plant in the, SIPCOT area. The contamination results from stored waste pile from the plant, which contains about 2.27 Lakh tons of material. The pile has been accumulated there for about 20 years. The pile covers about 2 hectares in area, and is 3-5 m in height. Nearby groundwater sources have been polluted with Chromium.

b) The two CETPs for tanneries located at SIPCOT area are discharging high TDS waste water outside on land which finally reaches Palar river pollute land and ground water.

4.1.5 Sources of soil contamination

The sources of soil contamination are mainly due to leachate from the dumpsite of M/s. Tamil Nadu Chromates & Chemicals Ltd., and due to the discharge of treated trade effluent from two CETPs for tanneries in SIPCOT area.

4.1.6 Type of existing Pollution

The leachate containing hexavalent chromium generated from the dumpsite of M/s. Tamil Nadu Chromates and Chemicals Ltd at SIPCOT area.

The physio-chemical and biological treatment systems provided collectively by the tanneries in SIPCOT area are not able to contain the TDS and its related parameters to the norms prescribed by the TNPC Board. The value of TDS in the effluent discharged from the CETPs is ranging from 4950- 10820 mg/litre as against the prescribed norms of 2100 mg/litre and the effluent thus discharged pollute the receiving water bodies and land.

4.1.7 Remedies for abatement, treatment and restoration of normal soil quality

M/s TCCL, SIPCOT

Containment Plan

Based on the Studies conducted by NEERI & NGRI, a revised project proposal has been submitted by the TIDCO Ltd., as a containment plan in nearby

land (Plot No.18) owned by M/s TCCL in an extent of 11.75 acres for containment of hazardous waste. The Containment facility will have the following components:

Base liner system

Reinforced Cement Concrete (RCC) for the Containment Cell

Top cover system

Leachate Collection system

Sub surface monitoring wells with instrumentation

TNPCB has prepared a project proposal on the remediation of the contaminated site of M/s TCCL, Ranipet with the cost estimate of Rs.80.36 crores for world bank funding under Capacity Building Industrial Pollution Management Programme which is assisted by the world bank through MoEF, Government of India.

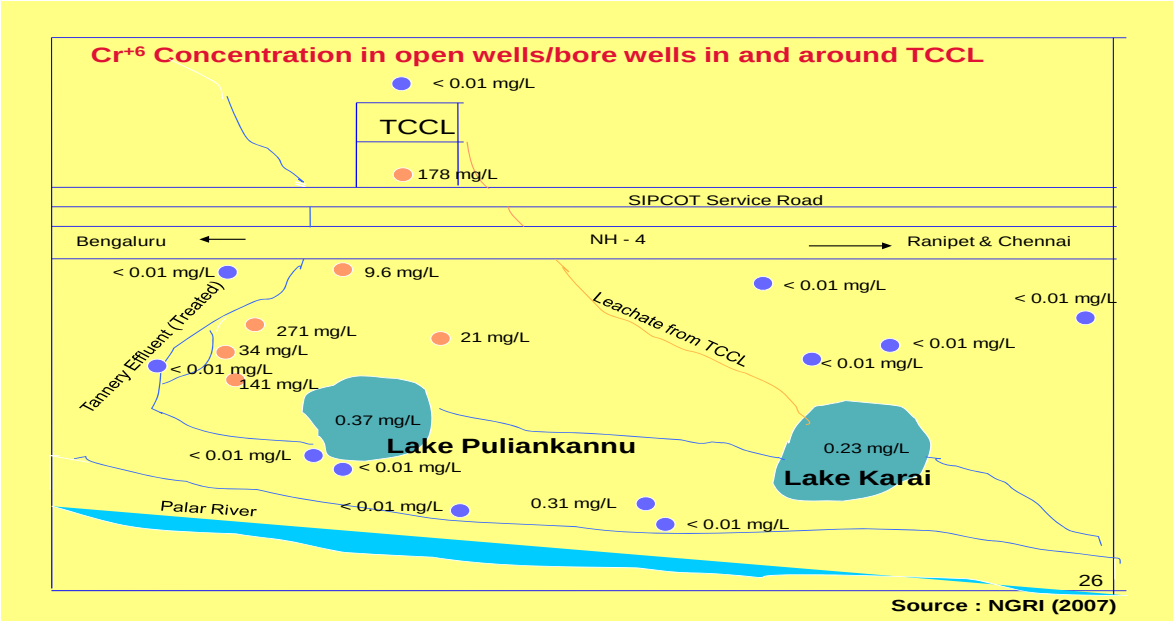
CETPs for tanneries

The two CETPs for tanneries are installing R.O. Plant with reject management system to abate pollution.

4.2 Ground water contamination

4.2.1 Present status/quality of ground water

Cr^{+6} level concentrations in open well/bore well in and around TCCL are shown in the following figure.



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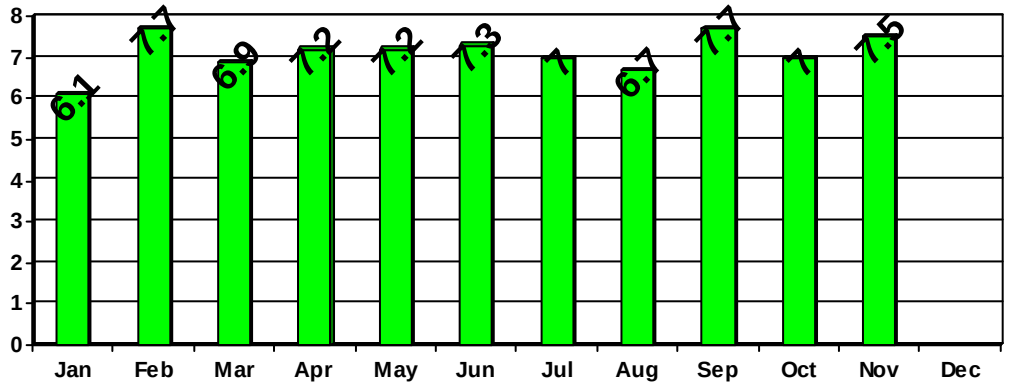
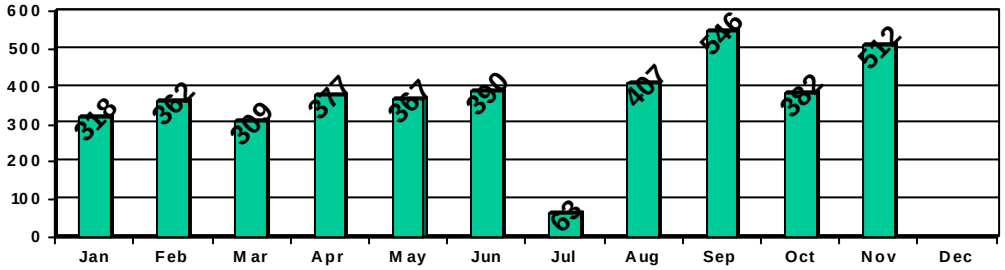
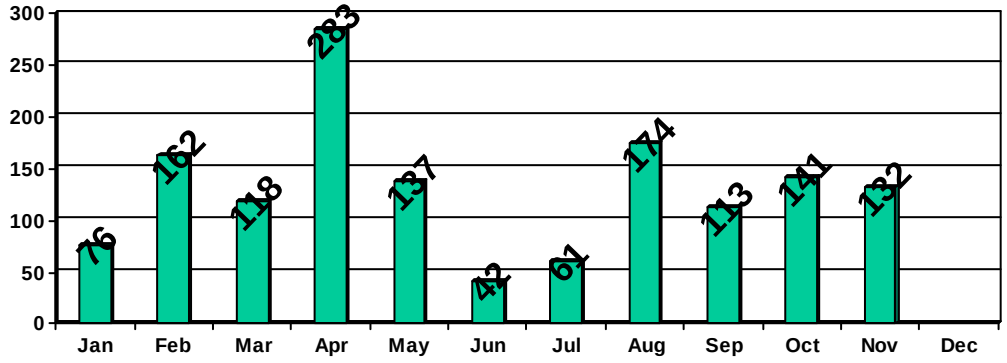


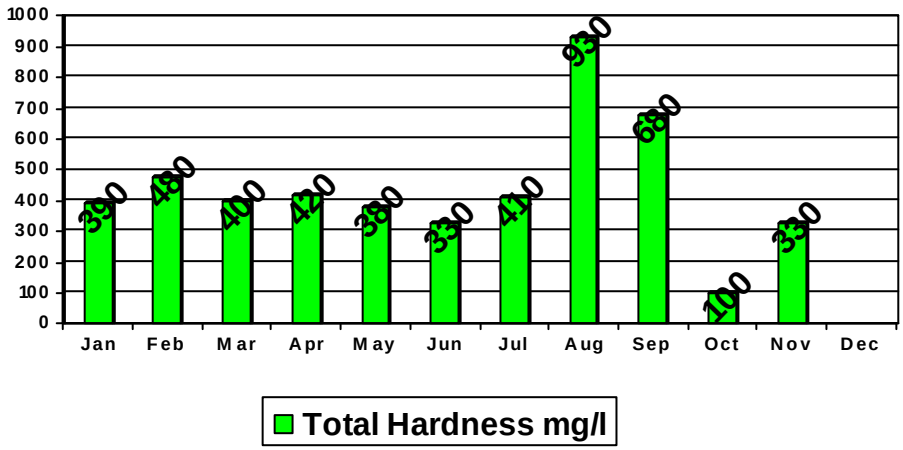
pH

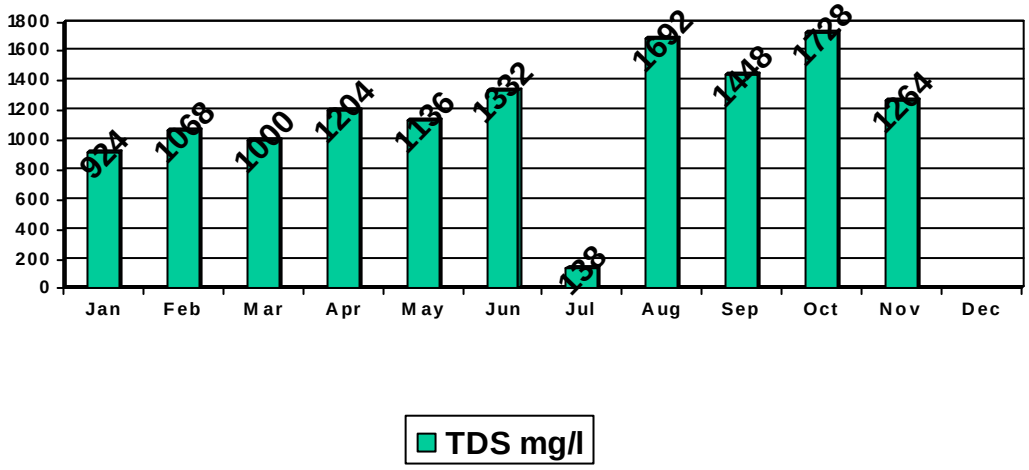


Chloride mg/l



Sulphate mg/l





The ground water monitored down stream of SIPCOT at Walajapet head works TDS, chloride and sulphate exceeds the drinking water standards.

4.2.2 Existing Sources of ground water pollution

The existing sources of ground water pollution are from the leachate of dump site of M/s. Tamil Nadu Chromate and Chemicals LTD, and the treated effluent from two CETPs for tanneries in SIPCOT area.

4.2.3 Ground water quality monitoring Program

Palar River base down stream head works such as Walajapet and Gudimallur samples are collected every month and analysed for the parameters such as pH, TSS, TDS, Chloride, Sulphate, Oil & Grease, Bod, Cod, Sulphides, Phenolic Compounds, Hexavalent Chromium, Total Chromium, % Sodium.

4.2.4 Action plan for control of pollution

M/s TCCL, SIPCOT

Containment Plan

Based on the Studies conducted by NEERI & NGRI, a revised project proposal has been submitted by the TIDCO Ltd., as a containment plan in nearby

land (Plot No.18) owned by M/s TCCL in an extent of 11.75 acres for containment of hazardous waste. The Containment facility will have the following components:

Base liner system

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TNPCB has prepared a project proposal on the remediation of the contaminated site of M/s TCCL, Ranipet with the cost estimate of Rs.80.36 crores for world bank funding under Capacity Building Industrial Pollution Management Programme which is assisted by the world bank through MoEF, Government of India.

CETPs for tanneries

The two CETPs for tanneries are installing R.O. Plant with reject management system to abate pollution.

4.2.5 Treatment and management of contaminated ground water bodies

A comprehensive ground water monitoring was carried out by NEERI in order to assess the impact of chromium bearing dump site of M/s. Tamil Nadu Chromates & Chemicals Ltd on the ground water resources. During the reconnaissance survey, all the existing ground water sources (dry wells, bore wells and hand pumps) in and around M/s. Tamil Nadu Chromates & Chemicals Ltd., were identified. The dug wells and hand pumps have been mostly dug to a shallow depth (upto 15m) whereas the borewells have been dug upto a depth of 50m. A total of 38 representative ground water samples were collected around the M/s. Tamil Nadu Chromates & Chemicals Ltd. The ground water samples were characterized for various heavy metal contents. The interpretation of the results was carried with main emphasis of total and hexavalent chromium. The concentration of total chromium and hexavalent chromium in the ground water samples collected upstpream (North) of M/s. Tamil Nadu Chromates & Chemicals Ltd is below the detectable limit. However, the concentration of total chromium in the sample which is located upstream of M/s. Tamil Nadu Chromates & Chemicals Ltd dump but very close to the dumps (about 15m) was 0.32 mg/lit. Beyond this point no chromium contamination was observed in the upstream direction. Similarly the concentration of total and hexavalent chromium in the

samples collected from the east, west-southeast, far southeast direction were also below the detectable limit.

However, significant concentration of total and hexavalent chromium was observed in many wells located in the close vicinity of M/s. Tamil Nadu Chromates & Chemicals Ltd., in the south and south east direction. The concentration of total chromium in these wells varied between 3.1 to 246 mg/lit whereas the concentration of hexavalent chromium varied between 2.1 to 214 mg/lit which far exceed the concentration of 0.05 mg/l prescribed under Indian Standards Specification for Drinking water quality. The ground water in this area is therefore, severely contaminated with hexavalent chromium.

Based on the detailed laboratory scale studies and techno-echnomic evaluation, an in-situ bioremediation (biotransformation) option was recommended by NEERI for implementation of bio-remediation of contaminated ground water in the critically polluted area.

The CPCB entrusted IIT, Madras to conduct “Demonstration Project for Bio Remediation of Chromium contaminated Soil and Aquifer in Ranipet Area” at a cost of Rs. 14.41 Lakhs. The scope of the Demonstration Project includes the following.

- Remediation of atleast 5 Tonnes of Chromium Sludge in the vicinity of TCCL at the site
- Demonstration of in-situ bioremediation of Cr (VI) contaminated aquifer in a 5mx5m area aquifer in the vicinity of TCCL by injection well-reactive zone technology.

4.2.6 Impact on CEPI score after abatement of pollution

Land

Score A

Pollutants	Category
BOD	B
F-	B
No_3	A

Considering Penalty value, factor A_1=3

Considering scale of activity, factor A_2 = 5

⁂ A = 3x5 = 15

Score B

Pollutants	Average Concentration *	Exceedence Factor
BOD	4	0.8
F-	0.55	0.916
No_3	18.5	1.23

*Source VIMTA report by CPCB, Annexure I – Table 2

**BOD : COD ratio is taken as 1:2.5

B1=4

B2 = 3 (Symptoms of exposure on people)

B3= 0 (Symptoms of exposure on Eco-geological features)

⁂ B= 4+3+0 = 7

Score C

Population exposed is between 10,000 to 1,00,000

C1=3

Pollutants	Samples Exceeded/Total No. of Samaples x EF	SNLF
BOD	0/2 x 0.8	0
F-	½ x 0.916	0.458
No_3	1/2 x1.23	0.615

C2=3.5

C3=5 (Risk to Sensitive receptors = Yes)

⁂ C= 3x3.5+5 = 15.5

D=15 (Common facilities for pollution control are inadequate)

A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	Land CEPI
3	5	15	4	3	0	7	3	3.5	5	15.5	15	52.5

4.3 Solid waste generation and management

4.3.1 Waste Classification and quantification

4.3.1.1 Hazardous waste

The dump site of M/c TCCL containing Cr^{+6} of 2.27 Lake tones and ETP sludge of 855 MT/Annum from two CETP for tanneries are the major hazardous waste in the SIPCOT industrial complex.

4.3.1.2 Management of solid waste from tanneries

The tanneries located in critically polluted area, which are members in the CETP i.e M/s. Ranipet SIDCO Finished Leather Effluent Treatment Co. Ltd and M/s. SIPCOT-SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Co.Ltd are processing only semi finished leather into finished leather. The solid wastes generated from these tanneries are mainly shaving, leather cuttings and buffing dusts of about 36 T/A, 5 T/A, and 10 T/A respectively. The solid wastes are disposed for other beneficial uses such as for leather board and leather meal.

The solid wastes generated from other tanneries which are not located in critically polluted area including those processing the raw skin are disposed for other beneficial uses such as animal glue manufacturing, leather board and leather meal.

4.3.2 Identification of waste minimization and waste exchange process

Nil

4.3.3 Reduction / Recovery / Reuse / Recycle in the Co- processing of waste

Nil

4.3.4 Infrastructural facilities

4.3.4.1 Existing TSDF/incineration facility including capacity

The CETPs have constructed Secured Land fill facilities based on CLRI design and as per CPCB guidelines such as water tight RCC base with 1.5mm thick HDPE liner and sand cover for HDPE liner, RCC side walls with liner, geo-grid cover for drainage arrangements, leachate collection for treatment in CETPs.

The two CETPs located in critically polluted areas i.e. M/s. Ranipet SIDCO Finished Leather Effluent Treatment Co. Ltd and M/s. SIPCOT-SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Co.Ltd which are treating effluent from member tanneries (Processing of semi finished to finished leather only) are disposing the sludge into the Secured Land Fill facility having a capacity of 4500 m3 and 3000 m3 respectively.

The other 8 CETPs which are not located in critically polluted area have also provided Secured Land Fill facilities for disposing of sludge from CETPs.

S. No	Name of CETP	Area of SLF in sq.m	Capacity of SLF m3.	Haz.Waste Handling T/Yr
1	M/s. Vaniyambadi Tanners Enviro Control System Ltd, Valayampet Sector,Vaniyambadi	23834	1,15,000	22080
2	M/s. Vaniyambadi Tanners Enviro Control System Ltd, Udyendiram Sector, Vaniyambadi			
3	M/s. Ambur Tannery Effluent Treatment Company Ltd.,Thuthipet Sector, Ambur	10000	50,000	3000

4	M/s. Ambur Tannery Effluent Treatment Company Ltd., Maligaithoppu Sector, Ambur			
5	M/s. Pernambut Tannery Effluent Treatment Co., Ltd, Bakkalapli Sector, Pernambut,	5000	18,000	1000
6	M/s. Ranipet Tannery Effluent Treatment Company Limited, V.C.Mottur Village ,Ranipet	12500	65000	6500
7	M/s. Melvishram Tanners Effluent Treatment Company Ltd, Melpudupet Sector, Ranipet			
8	M/s. Ranipet SIDCO Finished Leather Effluent Treatment Company Ltd., Ranipet	1001	4500	600
9	M/s. SIPCOT- SIDCO Phase II Entrepreneur Finished Leather Effluent Treatment Company (P) Ltd.	1000	3000	255
10	M/s. Visharam Tanners Enviro Control Systems (P) Ltd., Melvisharam	3825	15000	275

The TSDF maintained by the Tamil Nadu Waste Management Ltd at Gummidipoondi is being utilized for disposal of Land fillable waste from other industries.

5.0 PPP Model

5.1 Identification of project proposal for implementation under the PPP mode under Action Plan

Industries to improve pollution control equipment / device to satisfy the standards prescribed by the Board. The units to provide real time data to link with CARE AIR CENTRE at Board office. Board proposed to provide Continuous AAQ stations at SIPCOT Industrial complex. Adequate storm water drains to be provided within SIPCOT area. Existing storm water drains within SIPCOT area to be renovated & de silted by SIPCOT authorities. Existing sewer lines and oxidation ponds to be renovated by SIPCOT authorities.

6.0 Other infrastructural renewal measures

6.1 Status of green belt development in critically polluted areas

The critically polluted area comprising of SIPCOT Industrial Complex (Phase I & Phase II), Ranipet is 862.91 Acres. As per the norms fixed by the Board 25% of the area has to be earmarked for green belt development and trees have to be planted at the rate of 400 trees/hec. Generally the industries in the critically polluted area have planted adequate number of trees in their premises. Trees are also planted in the service roads in the industrial complex.

The type of trees planted are Neem, Banyan tree, Gulmar, Tamarind etc., No. of trees planted in some of the major industries are given below.

Sl.No.	Name of the unit	No. of trees Planted
1.	Thirumalai Chemicals Ltd	17,500
2.	Malladi Drugs & Pharmaceuticals Ltd Unit I	8,308
3.	Malladi Drugs & Pharmaceuticals Ltd Unit III	5,000
4.	Greaves Cotton Ltd	3,000
5.	Ranipet Tannery Effluent Treatment Co. Pvt Ltd	20,000
6.	SNAP Natural & Alginate Ltd	3,050
7.	SVIS Labs Ltd	176
8.	Stahl India Ltd	680
9.	Ultramarine & Pigments Ltd	4422
10.	Arjun Chemicals	1020

6.2 Development of industrial Estate

Adequate storm water drains to be provided within SIPCOT area. Existing storm water drains within SIPCOT area to be renovated and desilted by SIPCOT authorities. Providing Fire Hydrant network in SIPCOT area. SIPCOT service roads to be repaired and maintained. Existing sewer lines and oxidation ponds to be renovated by SIPCOT authorities.

7.0 Health Impact Study at critically polluted area.

Tamil Nadu Pollution Control Board has entrusted Sri Ramachandra Medical College, Chennai for carrying out Health impact study at the critically polluted area at Ranipet.

8.0 Overall Impact after installation / commissioning of pollution control equipments / measures on the CEPI score

No	Industrial Area/clusters	Air	Water	Land	CEPI
8	Ranipet	53.75	59.25	52.5	70.75

9.0 Summary of proposed action points

9.1 Short Term Action Points (up to 1 year, including continuous activities)

S. No	Action points (including source & mitigation measures)	Responsible stake holders	Time limit	Cost In lakhs	Remarks
1	Installation of RO plant with reject management system at two CETPs for tanneries in critically polluted area.	CETP companies	Dec 2010	4652	The installation of RO plant and reject management system work are under progress.
2	M/s Thirumalai Chemicals Ltd. 1 Post bed reactor for effective oxidation to reduce CO. 2 Installation of multiple effect evaporator.	Industry	July 2010 Oct 2010	40 250	Commissioned. Installation completed. Under trial run

9.2 Long Term Action Points (more than 1 year)

S. No	Action points (including source & mitigation measures)	Responsible stake holders	Time limit	Cost in Lakhs	Remarks
1	Containment of dumpsite at M/s TCCL, Ranipet	TIDCO, SIPCOT		8036	TNPCB has forwarded the project proposal to MoEF.
2	Upgradation of infrastructure facility of SIPCOT	SIPCOT			Proposals awaited.