



Inspection report on status of implementation of CEPI Action Plans at Ranipet, Vellore District, Tamil Nadu

**South Zonal
Office,
Bangalore**

Background:

Based on the industrial cluster/areas having aggregated CEPI scores of 70 and above were considered as critically polluted clusters/areas and Ministry of Environment & Forests vide office Memorandum of even no. dated 13.01.2010 had imposed moratorium on consideration of projects for Environmental clearance to be located critically polluted Areas/industrial clusters identified by CPCB. The details of the industrial clusters/ areas were further specified in the office memorandum dated 15.03.2010.

The SIPCOT industrial complex, Ranipet has Phase – 1 and Phase II where petro – Chemical Bulk drugs & Pharmaceuticals, Heavy engineering Foundry, chemicals, Tanneries and miscellaneous industries are located. The SIPCOT industrial complex, Ranipet was declared as critically polluted area since estimated CEPI score of this industrial complex was **81.79** in 2009 and the Ministry of Environment & Forests, Government of India imposed moratorium vide their letter dated January 13, 2010 for consideration of projects for Environmental Clearance. It was envisaged that during the period of moratorium, time bound action plans were prepared by the Tamil Nadu Pollution Control Boards (TNPCB) for improving the environmental quality in the industrial clusters/ areas.

Industrial Area/Cluster	Air	Water	Land	CEPI Score
Ranipet, Vellore, Tamil Nadu	69.25	65.25	62.50	81.79

The action plans so prepared was finalized by CPCB and asked concerned state board to form local stake holder/expert committee to implement the action plans to improve the Environmental quality in the critically polluted area/ industrial clusters. In accordance with the interim assessment of SIPCOT industrial complex, Ranipet by CPCB through monitoring and information received from TNPCB **during 2011, the CEPI Score was re- estimated and found increased from 81.79 to 84.73, hence moratorium has not been lifted.**

Industrial Area/Cluster	Air	Water	Land	CEPI Score
Ranipet, Vellore, Tamil Nadu	76.75	71.50	48.00	84.73

The Competent Authority of CPCB directed this office through vide letter no B-29016/ESS/CPA/2011-12 dated April 04, 2012 to assess the impact of implementation of the Action Plan in CPAs and to submit the assessment report of the progress achieved in Ranipet, Vellore District, T.N.

In this regard officials of CPCB, ZO (South), Bangalore had meeting with Shri, Kamraj, District Environmental Engineer, TNPCB, Vellore District on May 09, 2012. **In the meeting District Environmental Engineer informed that, no expert committee was formed and no meeting was convened with the Local stake holders, and also no report on status of implementation of short term and long term action points and progress achieved were provided.** It was also informed that, **07 highly polluted industries and 02 CEPT's** are identified in Ranipet industrial complex (critically polluted area), Vellore District and also identified 08 CETP's which are located outside of the critically polluted area. Out 08 CETP's **02 CETP's are** located in V.C.Mottur village at about 05 KM downstream of the critically polluted area and **01 CETP** in Melvisharam at about 10 KM upstream and **01 CETP in** Pernambut at about 60 KM and **02 CETPs** in Ambur at about 70 KM and **02 CETPs** at Vaniyambadi at 85 KM from the critically polluted area. These CETPs discharge their treated/partially treated effluent into the drainage which ultimately reaches the Palar River and causing surface water as well as ground water pollution. Following officials from

CPCB, ZO (south), Bangalore and TNPCB, Vellore District Regional Office were jointly inspected the industries and CETP's during May 09 - 11, 2012;

1. Mrs. H.D. Varalaxmi, EE, CPCB, ZO Bangalore
2. Mrs. Poornima, B.M. AEE, CPCB, ZO Bangalore
3. Mrs. Kalai Selvi, AE, TNPCB, Regional Office, Vellore
4. Mr. Ravichandran, AE, TNPCB, Regional Office, Vellore

Following are the industries visited and observations made w.r.t CEPI Action Plans submitted by the TNPCB:

A. The industries & CETP's located in the industrial Complex, Ranipet (Critically Polluted area)

1. M/s Thirumalai Chemicals, Ranipet: This unit was established in 1976 at Ranipet and manufacturing Phthalic Anhydride in the tune of 300 TPD`by using raw material as Ortho - Xylene and other by-products viz Maleic Anhydride of 60,000 TPA, Malic Acid of 8000TPA and Fumaric Acid of 14000 TPA etc.

The unit is generating 220 KLD of waste water from process and installed 03 stacks to oxidation plant, 01 stack to boiler and tarry distillation residue generated from catalyst reactor is being mixed with furnace oil in the ratio of 10 kg:1kl (Tarry acid residue: furnace oil) and fed in the boiler.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
Waste water: <ul style="list-style-type: none"> • Installation of Multi Effect Evaporator at source of effluent 	The unit has installed Multi effect evaporator and claiming that the effluent generation is in the tune of 195 kld	➤ No flow meter was available to verify the effect of installation of MEE.

<p>generation to reduce effluent quantity from 220 kld to 195 kld.</p> <ul style="list-style-type: none"> • Installation of post bed reactor at the phthalic Anhydride plant to reduce Tarry distillation Residue. • Physical, chemical and biological followed by ZLD system to be provide 	<p>Post bed reactor is installed and claiming that Tarry distillation is reduced from 15 tons/year to 13.5 T/y.</p> <p>Installed physical, chemical, biological followed by R.O. system. R.O reject is being stored in the enhanced solar evaporation.</p>	<ul style="list-style-type: none"> ➤ No provisions are made available to verify the same. ➤ The unit claims that their R.O. is operating at 85 % efficiency and generating R.O. reject of 30 kld. The R.O permeate is being used as cooling tower make up and R.O. reject is being sent to solar evaporation pond of size 2250 m². During inspection, the nozzles of the pan were found to be choked and the pan was filled with the R.O. reject and it was found to be overflowing.
<p>Source Emission:</p> <ul style="list-style-type: none"> • To install Wet Scrubber, Condensers, Cyclone separator with Dust collector • Online monitoring system for CO, VOC to be connected. 	<p>The unit has installed Wet Scrubber, Condensers, Cyclone separator with Dust collector</p> <p>The unit has installed CO, VOC monitoring system to 1 stack only.</p>	<ul style="list-style-type: none"> ➤ The unit has installed wet scrubber, condenser, cyclone separator with dust collector in process. The team has made physical verification, for working condition of control measures, in- depth monitoring is required. ➤ Out of three stacks, one stack is having online VOC, CO meter and the same is connected to TNPCB Care Air Centre. For other 02 stacks no VOC, CO meter is installed. During inspection it was found that HC of 15.14 ppm and CO of 26.3 mg/m³.



Fig 1: Post Bed Reactor



Fig 2: Cyclone Separator



Fig 3: MEE



Fig 4: R.O. system



Fig 5: Solar evaporation pan



Fig 6: enhanced solar evaporation



Fig 7: Online VOC Meter



Fig 8: Dust collector

2. M/s Malladi drugs & Pharmaceuticals, Unit –I: The unit is manufacturing Ephedrine Hydrochloride in the tune of 35 Mt/month by using Molasses as raw material.

The unit is generating effluent in the tune of 120 kld. The unit has two boiler of capacity 4 t/hr (bio gas based) and 3.5 t/hr (wood based) and generating Hazardous Waste as spent carbon of 1.44 Mt/year and used oil of 1200 litre/year.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Waste Water:</p> <ul style="list-style-type: none"> To install Primary treatment, Bio-reactor, R O plant, multiple effect evaporator and Bio-composting. 	<p>The unit has installed bio-methanation plant followed by R.O. plant and 02 Multi effect evaporators of 05 effects and 03 effects to concentrate effluent followed by bio composting plant in 1.23</p>	<p>➤ The unit is claiming that they are reducing effluent quantity from 120 KLD to 30-40 KLD and utilising concentrated effluent for making bio compost by using press mud as filler material. The R.O. permeate is being utilised for cooling tower make up and part of MEE</p>

	<p>acres to achieve ZLD.</p>	<p>condensate is using as boiler make up and remaining is being used for plantation in the premises.</p>
<p>Source Emission :</p> <ul style="list-style-type: none"> To install Wet Scrubber, Dust collectors. Online monitoring system for VOC to be connected. 	<p>The unit has installed Wet Scrubber in synthetic process section. Dust collector is provided in the wood fired boiler to control SPM.</p> <p>Online VOC monitoring system is installed to monitor VOC concentration in ambient</p>	<ul style="list-style-type: none"> ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required. ➤ At the time of inspection, the Online monitoring system for VOC was showing zero reading and the same has been connected to TNPCB Care Air centre.
 <p>Fig 9: Dust Collector System</p>	 <p>Fig 10: Online VOC monitoring system</p>	 <p>Fig 11: Wet Scrubber</p>
 <p>Fig 12: Scrubber</p>	 <p>Fig 13: Multi effect evaporator</p>	 <p>Fig 14: Bio - Composting</p>

3.	<p>M/s Malladi drugs & Pharmaceuticals, Unit –III: The unit is manufacturing Pseudoephedrine Hydrochloride in the tune of 12 MT/month by using Ephedrine HCL as raw material.</p> <p>The unit is generating effluent as Low TDS effluent about 1-2 m³/day and High TDS effluent about 2-3 m³/day. The unit has one boiler of capacity 4 t/hr capacity, furnace oil is being used as fuel for boiler and generating Hazardous Waste as spent carbon of 600kg/year, used oil of 600 litre/year and salt from MEE</p>	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, Chemical, Multiple effect evaporator followed ZLD. 	<p>The unit has installed Physico chemical treatment system followed by Double Effect Evaporator and centrifuge for salt separation.</p>	<ul style="list-style-type: none"> ➤ The unit is claiming that, they are concentrating the effluent through Double Effect Evaporator and increasing the solid concentration from 15% to 30 % and this concentrated effluent is being centrifuged to separate salt and mother liquor being recycled in Double effect evaporator. ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required.
<p>Source Emission :</p> <ul style="list-style-type: none"> To install Wet Scrubber, Dust collectors. Online monitoring system for VOC to be connected. 	<p>The unit has installed Wet Scrubber in the process section. No Dust collector is provided in the boiler.</p> <p>Online VOC monitoring system is installed to monitor VOC concentration in ambient</p>	<ul style="list-style-type: none"> ➤ The unit claims that since furnace oil is used as fuel no dust collector is installed at boiler. The team has made physical verification, for working condition of control measures, in- depth monitoring is required. ➤ At the time of inspection the online monitoring system for VOC was showing zero reading and the same has been connected to TNPCB Care Air centre.



Fig 15: Centrifuge



Fig 16: Concentrated effluent storage tanks



Fig 17: Double effect Evaporator



Fig 18: Wet Scrubber

4. M/s Ultramarine and Pigments Ltd.: The unit is manufacturing Ultra marine blue in the tune of 200 MT/day by using Soda ash, China clay, sulphur and Carbon as raw material and Surfactants in the tune of 1000 MT/day.

The unit is generating effluent about 39 m³/day. The unit has 80 kilns to produce Ultra marine blue, the unit is operating one kiln per day. The unit has one wood fired boiler.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, Chemical, followed by ZLD. 	<p>The unit has installed Physico chemical treatment system followed by R.O. and Multi Effect Evaporator.</p>	<ul style="list-style-type: none"> ➤ The unit claims that their R.O. is operating at 56 % efficiency and generating R.O. reject of 17 kld. The R.O permeate is being used as cooling tower make up and R.O. reject is being concentrated through MEE and recovering sodium sulphate salt which is being used as raw material in Surfactants manufacturing process. ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required.
<p>Source Emission :</p> <ul style="list-style-type: none"> To install Wet Scrubber, Dust collectors. 	<p>The unit has installed wet scrubber followed by six Cyclone in pigment process and one wet Scrubber and</p>	<ul style="list-style-type: none"> ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required.

- Online SO₂ monitoring system to be connected.

integrated cyclone system in the Sulphonation process.

Dust collector system to all the Kilns. Online SO₂ monitoring system is installed to monitor SO₂ concentration in the stack provided in the pigmentation process and sulphonation plant.

- At the time of inspection the Online SO₂ monitoring system was showing 20 ppm and the same has been connected to **TNPCB Care Air centre.**



Fig 19: MEE



Fig 20: concentrated effluent pan



Fig 21: Centrifuge to recover sodium sulphate salt



Fig 22: Solar evaporation pan



Fig 23: R.O. System

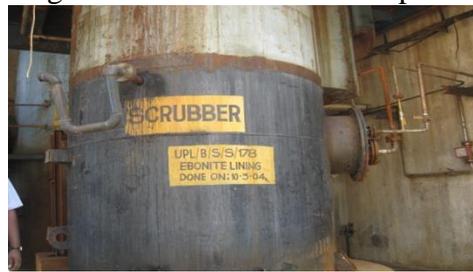


Fig 24: Wet Scrubber in the Sulphonation process



Fig 25: Cyclone Separator



Fig 26: Online SO₂ monitoring system

5.	<p>M/s Sthal India Pvt., Ltd., : The unit is manufacturing 09 Leather finishing Chemicals viz polyurethane, Acrylic resins, Lacquers and Lacquers emulsion, Pigment Dispersions, Protein Binders, Wax Emulsions and fillers, Permethane Coatings, Shoe finishes, and Dry Emulsions by using different raw materials like Reactants (Liquids) Solvents (Liquids), Binders and Fillers (Powders or Flakes), Plasticizers (Liquids), Surfactants (Liquids / Semi-solids), Pigments (Powders), Dry Tanning Powders and others.</p> <p>The unit is generating effluent in the tune of 20-21 kld. The unit has one boiler of capacity 3 T/hr capacity, furnace oil is being used as fuel and generating Hazardous Waste like ETP Sludge of 190 MTA, Rector Residue of 43 MTA, off specific material of 89 MTA, solvent Residue of 10.2 MTA, waste oil of 1.2 MTA, Oily cotton of 0.6MTA and filter bags of 18.2 MTA.</p>	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, Chemical, followed by biological treatment system. 	<p>The unit has provided ETP having Oil skimmer, Equalization cum Flocculation tank, Plate settler, Aeration, Secondary Settling Tank, Hypo addition Tank, followed by Sand Filter to treat 24 KLD effluent generated</p>	<ul style="list-style-type: none"> ➤ The treated effluent is being used for gardening purpose in the premises. The sludge generated from the ETP and process is being sent to TSDF, Gummidipoondi. ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required.
<p>Source Emission :</p> <ul style="list-style-type: none"> To install on line VOC monitoring system. 	<p>The unit has installed online VOC meter as per the direction of TNPCB.</p>	<ul style="list-style-type: none"> ➤ At the time of inspection online VOC monitoring system was showing VOC of 45 ppm. Online VOC monitoring system is not connected to TNPCB Care Air Centre.
 <p>Fig 27: Online VOC System</p>	 <p>Fig 28: Aeration tank</p>	 <p>Fig 29: Filter Press Fig 30: ETP Sludge</p>

6.	<p>M/s Swiss Labs Ltd.: The unit is manufacturing Isobutyl Acetophenone (IBAP) in the tune of 20-23 MT/month by using Isobutyl Benzene, Acetyl Chloride and Aluminium Chloride as raw material and Trichloro Ethylene as Solvent. In the process Lean HCL and Aluminium Chloride are two by products.</p> <p>The unit claims that they are generating effluent in the tune of 1.2 kld. The unit has one boiler of capacity 1.5t/hr capacity, fire wood is being used as fuel and generating Hazardous Waste of 680 kg/year (solid) and 420 kg/year (semi solid).</p>	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Source Emission :</p> <ul style="list-style-type: none"> To install Wet Scrubber, Dust collectors. 	<p>The unit has installed HCL Scrubber in the process to recover HCL and recovered HCL is being sold to the traders.</p> <p>No dust collector is installed in the boiler.</p>	<ul style="list-style-type: none"> ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required. ➤ The unit claims that since boiler capacity is very small dust collector is not provided. ➤ As per TNPCB direction the unit has installed VOC online monitoring system and the same has been connected to TNPCB Care Air centre.
 <p>Fig 31: HCL Scrubber</p>	 <p>Fig 32: Solar Evaporation Pan</p>	  <p>Fig 33: Online VOC Meter Fig 34: Fire wood Boiler</p>
7.	<p>Tamil Nadu Chromate & Chemicals Ltd., (TCCL) SIPCOT, Ranipet: The unit was established in 1975 and manufactured (i) Sodium bichromate of 150 T/M, (ii) Basic Chromium Sulphate of 300 T/M and (iii) Sodium sulphate of 240 T/M. In the process, the unit generated chromium bearing (hexavalent & trivalent) solid waste in the tune of 32 T/day and dumped in the premises</p>	

	<p>itself. The unit was stopped its operation since 1995, presently around 2.27 lakh tons of Chromium bearing solid waste is lying in the factory premises, due to this land soil and ground water in the surrounding area have been contaminated with chromium. 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.</p>		
CEPI Action Plan	Implementation Status	Observation of the Inspection Team	
<ul style="list-style-type: none"> Remedies for abatement, treatment and restoration of normal soil and ground water 	<p>Based on the studies conducted by NEERI & NGRI, a revised project proposal for remediation has been submitted by the TIDCO Ltd.,</p> <p>The 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, Govt., of India.</p>	<p>➤ No remedial work is found started.</p>	
8.	<p>M/s Ranipet SIDCO Phase-I (CETP), Ranipet: The CETP is receiving the effluent in the range 1100 - 1300 m³/day against the designed capacity of 2500 m³/day. It is informed that the CETP is being operated in the range of 45-55% of capacity since some of their member units are not operating tannery at full capacity</p>		
CEPI Action Plan	Implementation Status	Observation of the Inspection Team	
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil 	<p>The CETP has installed physical, Chemical biological treatment system followed by Ultra filtration system, and R.O. plant. Multi Effect</p>	<p>➤ The CETP is operating Physical, Chemical, biological treatment system regularly. They installed U.F & R.O. plant of capacity 2500 kld and same was found under trail run.</p>	

<p>pollution.</p>	<p>Evaporator and boiler under commissioning stage.</p> <p>The CETP has constructed Secured Land Fill(SLF) of capacity 4000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units</p>	<ul style="list-style-type: none"> ➤ Erection of MEE (7 effect) and Boiler were found under progress. ➤ Presently secondary treated effluent being discharged to drain which ultimately joins the Palar River. ➤ The SLF was found half filled with hazardous waste, but no proper approach /ramp is made for uniform disposal. In the absence of proper approach/ramp, the Hazardous waste is found dumped adjacent to SLF. It is informed that temporarily HW is being dumped adjacent to SLF and same is being disposed to SLF with the help of tipper. Stagnated water was found in many pockets of SLF. No proper leachate collection system is provided. ➤ The surface runoff from temporary dumping of hazardous waste adjacent to SLF may cause ground water as well as surface water pollution in the surrounding area.
<p>To install DG Sets :</p> <ul style="list-style-type: none"> • To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 250 KVA (01 no.) and 600 KVA (01 no.)</p>	<ul style="list-style-type: none"> ➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.
 <p>Fig 35: R.O. under trail run</p>	 <p>Fig36: MEE under commissioning</p>	 <p>Fig 37: DG sets</p> <p>Fig 38: SLF</p>

9.	M/s SIPCOT – SIDCO, Phase-II, Entrepreneur Finished Leather Effluent Treatment Co. Ltd., (CETP): The CETP has facilities to treat 1.1 MLD. It is informed that the CETP is being operated at less than 50% capacity (400 -500 kld) since their member units are operating their tannery less than 50 % capacity.	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
Waste Water: <ul style="list-style-type: none"> • To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical biological treatment system followed by Ultra filtration system, R.O. plant. Multi Effect Evaporator and boiler under commissioning stage.</p> <p>The CETP has constructed Secured Land Fill(SLF) of capacity 3000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units</p>	<ul style="list-style-type: none"> ➤ The CETP is operating Physical, Chemical, biological treatment system and Ultrafiltration system regularly. They installed R.O. plant of capacity 1000 kld and same was found under trail run. ➤ Erection of MEE and Boiler were found under progress. ➤ Presently secondary treated effluent being discharged to drain which ultimately joins the Palar River. ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required. ➤ The SLF was found half filled with hazardous waste, but no proper approach is made for scientific disposal. In the absence of proper approach, the Hazardous waste is found dumped adjacent to SLF. It is informed that temporarily HW is being dumped adjacent to SLF and same is being disposed to SLF with the help of tipper. Stagnated water was found in many pockets of SLF. No proper leachate collection system is provided. ➤ The surface runoff from temporary dumping of hazardous waste adjacent to SLF may cause ground water as well as surface water pollution in the surrounding area.

<p>To install DG Sets :</p> <ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 250 KVA.</p>	<p>➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.</p>
 <p>Fig 39: R.O. under trail run</p>	 <p>Fig 40: MEE & Boiler under progress</p>	 <p>Fig 41: SLF</p> <p>Fig 42: DG set</p>

B. Status of pollution control measures taken by 8 CETP's which are causing water pollution outside the CEPI area

1. M/s. Ranipet Tannery Effluent Treatment (CETP), Melpudupet Sector, Ranipet: The CETP has 58 active members and having facilities to treat 4000 m³ /day. It is informed that the CETP is being operated at less than 50% capacity since their member units are operating their tannery less than 50 % capacity.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical biological treatment system followed by Ultra filtration system, R.O. plant and Multi effect Evaporator.</p> <p>The CETP has constructed Secured Land Fill(SLF) of capacity 45000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units</p>	<ul style="list-style-type: none"> ➤ The CETP is operating Physical, Chemical, biological treatment system and Ultrafiltration system regularly. R.O. plant and MEE operation were found under trail run. The CETP representative informed that for MEE operation they applied for CEIG (Central electrical Inspection General Rules) permission and it is yet to be obtain. ➤ Presently part of secondary treated effluent being treated through R.O., the reject is being mixed with part of secondary treated effluent and discharging into drain which ultimately joins the Palar River. ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required. ➤ The SLF was found half filled with hazardous waste, but no proper approach is made for scientific disposal. In the absence of proper approach, the Hazardous waste is found dumped adjacent to SLF. It is informed that temporarily HW is being dumped adjacent to SLF and same is being disposed to SLF with the help of tipper.

		<p>Stagnated water was found in many pockets of SLF. No proper leachate collection system is provided.</p> <p>➤ The surface runoff from temporary dumping of hazardous waste adjacent to SLF may cause ground water as well as surface water pollution in the surrounding area.</p>
<p>To install DG Sets :</p> <ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 600 KVA of 03 no's and 380 KVA of 01 no.</p>	<p>➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.</p>
 <p>Fig 43: R.O. under trail run</p>	 <p>Fig 44: MEE under trail run</p>	 <p>Fig 45: SLF</p>  <p>Fig 46: DG sets</p>
<p>2.</p>	<p>M/s. Melvisharam Tanneries Effluent Treatment Co. Ltd.,(CETP) : The CETP has 14 active members and receiving the effluent in the range 150-200 m³/day against the designed capacity of 550 m³/day. It is informed that the CETP is being operated in the range of 27-36% of capacity since some of their member units are not operating tannery at full capacity.</p>	
<p>CEPI Action Plan</p>	<p>Implementation Status</p>	<p>Observation of the Inspection Team</p>
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground 	<p>The CETP has installed physical, Chemical biological treatment system.</p>	<p>➤ The CETP is operating Physical, Chemical, biological treatment system and discharging secondary treated effluent into drain which ultimately joins the Palar River.</p>

<p>water, surface water and soil pollution.</p>		<p>➤ It is informed that pipe line from this CETP to M/s Ranipet Tannery effluent Treatment Company Ltd, Melpudpet Sector (sister concern CETP) being laid down to take secondary treated effluent and to utilise ZLD system of that CETP to achieve zero discharge.</p>
<p>To install DG Sets :</p> <ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 250 KVA.</p>	<p>➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.</p>
<p>3.</p>	<p>M/s. Visharam Tanners Enviro Control Systems (P) Ltd.,(CETP): The CETP is receiving the effluent in the tune of 750 m3/day against the designed capacity of 3400 m3/day. It is informed that the CETP is being operated in the range of 20-25% of capacity since some of their member units are stopped production.</p>	
<p>CEPI Action Plan</p>	<p>Implementation Status</p>	<p>Observation of the Inspection Team</p>
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical, biological treatment system followed by Ultra filtration system, R.O. plant and Multi effect Evaporator.</p>	<p>➤ The CETP is operating Physical, Chemical, biological treatment system and Ultrafiltration followed by. R.O. plant. The R.O. permeate is being sent back to their member units and R.O. reject is being concentrated through MEE and generating 1.6 – 1.7 MT of salt.</p> <p>➤ During inspection it was observed that secondary treated effluent and R.O. rejects was stored in the tanks which indicate the poor operation of R.O. plant and MEE.</p> <p>➤ During inspection around 300 tonnes of salt was stored near MEE plant itself.</p> <p>➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required.</p>

	<p>The CETP has constructed Secured Land Fill(SLF) of capacity 15000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units</p>	<ul style="list-style-type: none"> ➤ The SLF was found half filled with hazardous waste, but no proper approach/ramp is made for uniform disposal. In the absence of proper approach/ramp, the Hazardous waste is found dumped adjacent to SLF. It is informed that temporarily HW is being dumped adjacent to SLF and same is being disposed to SLF with the help of tipper. Stagnated water was found in many pockets of SLF. No proper leachate collection system is provided. ➤ The surface runoff from temporary dumping of hazardous waste adjacent to SLF may cause ground water as well as surface water pollution in the surrounding area.
<p>To install DG Sets :</p> <ul style="list-style-type: none"> • To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 500 KVA of 01 no. and 380 KVA of 01 no.</p>	<ul style="list-style-type: none"> ➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.
 <p>Fig 47: UF & R.O. System</p>	 <p>Fig 48: MEE</p>	 <p>Fig 49: Salt</p>  <p>Fig 50: SLF</p>
<p>4.</p>	<p>M/s. Vaniyambadi Tanners Enviro Control Systems Ltd., Valayampet Sector, Vaniyambadi: The CETP has 132 active members and receiving the effluent in the tune of 2400 -2600 m³/day against the designed capacity of 4000 m³/day. It is informed</p>	

	that the CETP is being operated in the range of 60-65% of capacity since some of their member units are not operating tannery at full capacity.	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical biological treatment system (conventional aeration and MBR) followed by Ultra filtration system, R.O. plant and Multi effect Evaporator.</p> <p>The CETP has constructed Secured Land Fill(SLF) of capacity 115000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units</p>	<ul style="list-style-type: none"> ➤ During the inspection it was observed that, the unit is partly treating through MBR and partly treating through conventional aeration system. Part of secondary treated effluent is treated through R.O. The R.O. reject is being mixed with secondary treated effluent and discharged into Palar River. ➤ MEE was found commissioned and taken for trail run. ➤ The SLF was found one fourth was filled with hazardous waste, but no proper approach/ramp is made for scientific disposal. In the absence of proper approach, the Hazardous waste is found dumped adjacent to SLF. It is informed that temporarily HW is being dumped adjacent to SLF and same is being disposed to SLF with the help of tipper. Stagnated water was found in many pockets of SLF. No proper leachate collection system is provided. ➤ The old H.W. dumping site is exist near to SLF, in that huge quantity of H.W. is lying without proper capping ➤ The surface runoff from old dumping site and temporary dumping of hazardous waste adjacent to SLF may cause ground water as well as surface water pollution in the surrounding area.

<p>To install DG Sets :</p> <ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 1110 KVA of 02 no. and 380 KVA of 01 no.</p>	<p>➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.</p>
 <p>Fig 51: R.O</p>	 <p>Fig 52: MEE under repair</p>	 <p>Fig 53: R.O. reject stored in Lagoon</p>  <p>Fig 54: SLF</p>
<p>5.</p>	<p>M/s. Vaniyambadi Tanners Enviro Control Systems Ltd., Udayendiram Sector, Vaniyambadi: The CETP has only 10 active members and receiving the effluent in the tune of 100 m³/day.</p>	
<p>CEPI Action Plan</p> <p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>Implementation Status</p> <p>This unit is the Sister Concern of Vaniyambadi Tanners Enviro Control systems Ltd., Valayampet sector, only primary treatment system is provided</p>	<p>Observation of the Inspection Team</p> <p>➤ During the inspection, the unit member informed that, the trade effluent is given only Primary Treatment and is then sent to their Sister Concern unit at Valayampet CETP to achieve zero discharge.</p>
<p>6.</p>	<p>M/s. Ambur Tannery Effluent Treatment Co. Ltd., Malligethope Sector, Ambur: The CETP has 12 active members and receiving the effluent in the range of 450 -550 m³/day against the designed capacity of 800 m³/day. It is informed that the CETP is being operated in the range of 56-68% of capacity since some of their member units are not operating tannery at full capacity.</p>	

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical biological treatment system (MBR) followed by Ultra filtration system, R.O. plant and Multi effect Evaporator.</p>	<ul style="list-style-type: none"> ➤ The CETP is operating Physical, Chemical, biological treatment system and Ultrafiltration followed by. R.O. plant. The R.O. permeate is being sent back to their member units and R.O. reject is being concentrated through MEE. ➤ During inspection MEE was not in operation, it is informed that due to mechanical problem MEE operation was stopped since 45 days and R.O. reject is being discharged into nearby drain which ultimately joins the Palar river. ➤ The CETP has no dedicated SLF. It uses Ambur Tannery Effluent Treatment Co. Ltd., Thuthipet sector, Ambur for Sludge disposal.
<p>To install DG Sets :</p> <ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 500 KVA.</p>	<ul style="list-style-type: none"> ➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.
 <p>Fig 55: Crystalliser under repair</p>	 <p>Fig 56: Ultrafiltration system</p>	  <p>Fig 57: R.O</p> <p>Fig 58: DG Set</p>

7.	M/s. Ambur Tannery Effluent Treatment Co. Ltd., Thuthipet Sector Ambur: The CETP has 57 active members and receiving the effluent in the range 1600-1800 m ³ /day against the designed capacity of CETP 2400 m ³ /day. It is informed that the CETP is being operated in the range of 66-75% capacity since some of their member units are not operating tannery at full capacity.	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
Waste Water: <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical biological treatment system (MBR) followed by Ultra filtration system, R.O. plant and Multi effect Evaporator.</p> <p>The CETP has constructed Secured Land Fill(SLF) of capacity 10000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units</p>	<ul style="list-style-type: none"> ➤ The CETP is operating Physical, Chemical, biological treatment system and Ultrafiltration followed by. R.O. plant. The R.O. permeate is being sent back to their member units and R.O. reject is being concentrated through MEE. ➤ During inspection MEE was not in operation, it is informed that due to mechanical problem MEE operation was stopped since 10 days and R.O. reject is being discharged into nearby drain which ultimately joins the Palar river. ➤ The SLF was found one fourth was filled with hazardous waste, but no proper approach/ramp is made for scientific disposal. In the absence of proper approach, the Hazardous waste is found dumped adjacent to SLF. It is informed that temporarily HW is being dumped adjacent to SLF and same is being disposed to SLF with the help of tipper. Stagnated water was found in many pockets of SLF. No proper leachate collection system is provided. ➤ The old H.W. dumping site is exist near to SLF, in that huge quantity of H.W. is lying without proper capping ➤ The surface runoff from old dumping site and temporary dumping of hazardous waste adjacent to SLF may cause ground water as well as surface water pollution in the surrounding area.

<p>To install DG Sets :</p> <ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 1100 KVA of 01 no. and 200 KVA of 01 no.</p>	<p>➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.</p>
 <p>Fig 59: UF & R.O. system</p>	 <p>Fig 60: Multi Effect Evaporator</p>	 <p>Fig 61: Crystalliser</p>  <p>Fig 62: SLF</p>
<p>8. Pernambut Tannery Effluent Treatment Co. Ltd., Bakkalapalli sector, Pernambut: The CETP has 36 active members and receiving the effluent in the range 500-600 m³/day against the designed capacity of 01 MLD. It is informed that the CETP is being operated in the range of 50-60% capacity since some of their member units are not operating tannery at full capacity due to lean season.</p>		
<p>CEPI Action Plan</p>	<p>Implementation Status</p>	<p>Observation of the Inspection Team</p>
<p>Waste Water:</p> <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical, biological treatment system followed by Ultra filtration system, R.O. plant and Multi effect Evaporator.</p>	<p>➤ The CETP is operating Physical, Chemical, biological treatment system and Ultra filtration system regularly. R.O. plant was found under trail run and erection of MEE was under progress.</p> <p>➤ Presently part of secondary treated effluent being treated through R.O., the reject is being mixed with part of secondary treated effluent and discharging into drain which ultimately joins the Palar River.</p> <p>➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is</p>

	The CETP has constructed Secured Land Fill (SLF) of capacity 20000 m ³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units.	required. ➤ Stagnated water was found in many pockets of SLF, no proper leachate collection system is provided.
To install DG Sets : • To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure.	The CETP has installed DG sets of capacity 320 KVA of 01 no. and 125 KVA of 01 no.	➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.
 Fig 63: R.O. System under trail run	 Fig 64: MEE under progress	  Fig 65: SLF Fig 66: DG Set

C. Overall Recommendations :

- (i) The disposal of Hazardous waste stored at M/s Tamil Nadu Chromate and Chemicals Ltd., is still not resolved though many studies were conducted. Remediation/disposal of this highly pollution potential waste may be taken up on priority.
- (ii) TNPCB may be asked to form Local Stake Holder Committee and to held meetings at least once in 3 months with involvement of all stake holders. The outcome of the meeting may be communicated to CPCB.

- (iii) Industry specific action points are more or less achieved but CETP and local bodies failed to show much progress.
- (iv) Though the area was specified to SIDCO industrial area Ranipet, CETP's working out side also was considered/included for the study. A clear demarcation of the area may be further notified/restricted.
- (v) It is felt necessary that TNPCB shall monitor periodically all individual and common outlets (both waste water & stack) so that, strict vigilance can be maintained.
- (vi) Issues like leachate collection system in SLF's, end treatment of RO reject viz a viz, MBR,MEE are to be looked into, since the end treatment is not complete, the entire concept of ZLD will backfire and may reflect in the CEPI index.
- (vii) TNPCB shall ensure that all the industries are in operation as per consent conditions under Water/Air/HW Rules/Act. Non performers may be directed to comply the directions.
- (viii) TNPCB may convey a meeting to look into all the points for further review of CEPI at Ranipet.

1.	M/s Ranipet SIDCO Phase-I (CETP), Ranipet: The CETP is receiving the effluent in the range 1100 - 1300 m ³ /day against the designed capacity of 2500 m ³ /day. It is informed that the CETP is being operated in the range of 45-55% of capacity since some of their member units are not operating tannery at full capacity	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
Waste Water: <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical biological treatment system followed by Ultra filtration system, and R.O. plant. Multi Effect Evaporator and boiler under commissioning stage.</p> <p>The CETP has constructed Secured Land Fill(SLF) of capacity 4000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units</p>	<ul style="list-style-type: none"> ➤ The CETP is operating Physical, Chemical, biological treatment system regularly. They installed U.F & R.O. plant of capacity 2500 kld and same was found under trail run. ➤ Erection of MEE (7 effect) and Boiler were found under progress. ➤ Presently secondary treated effluent being discharged to drain which ultimately joins the Palar River. ➤ The SLF was found half filled with hazardous waste, but no proper approach /ramp is made for uniform disposal. In the absence of proper approach/ramp, the Hazardous waste is found dumped adjacent to SLF. It is informed that temporarily HW is being dumped adjacent to SLF and same is being disposed to SLF with the help of tipper. Stagnated water was found in many pockets of SLF. No proper leachate collection system is provided. ➤ The surface runoff from temporary dumping of hazardous waste adjacent to SLF may cause ground water as well as surface water pollution in the surrounding area.
To install DG Sets :		

<ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 250 KVA (01 no.) and 600 KVA (01 no.)</p>	<p>➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.</p>
 <p>Fig 35: R.O. under trail run</p>	 <p>Fig36: MEE under commissioning</p>	  <p>Fig 37: DG sets</p> <p>Fig 38: SLF</p>

2.	M/s SIPCOT – SIDCO, Phase-II, Entrepreneur Finished Leather Effluent Treatment Co. Ltd., (CETP): The CETP has facilities to treat 1.1 MLD. It is informed that the CETP is being operated at less than 50% capacity (400 -500 kld) since their member units are operating their tannery less than 50 % capacity.	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
Waste Water: <ul style="list-style-type: none"> • To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical biological treatment system followed by Ultra filtration system, R.O. plant. Multi Effect Evaporator and boiler under commissioning stage.</p> <p>The CETP has constructed Secured Land Fill(SLF) of capacity 3000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units</p>	<ul style="list-style-type: none"> ➤ The CETP is operating Physical, Chemical, biological treatment system and Ultrafiltration system regularly. They installed R.O. plant of capacity 1000 kld and same was found under trail run. ➤ Erection of MEE and Boiler were found under progress. ➤ Presently secondary treated effluent being discharged to drain which ultimately joins the Palar River. ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required. ➤ The SLF was found half filled with hazardous waste, but no proper approach is made for scientific disposal. In the absence of proper approach, the Hazardous waste is found dumped adjacent to SLF. It is informed that temporarily HW is being dumped adjacent to SLF and same is being disposed to SLF with the help of tipper. Stagnated water was found in many pockets of SLF. No proper leachate collection system is provided. ➤ The surface runoff from temporary dumping of hazardous waste adjacent to SLF may cause ground water as well as surface water pollution in the surrounding area.

<p>To install DG Sets :</p> <ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 250 KVA.</p>	<p>➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.</p>
 <p>Fig 39: R.O. under trail run</p>	 <p>Fig 40: MEE & Boiler under progress</p>	  <p>Fig 41: SLF</p> <p>Fig 42: DG set</p>

3.	M/s. Vaniyambadi Tanners Enviro Control Systems Ltd., Valayampet Sector, Vaniyambadi: The CETP has 132 active members and receiving the effluent in the tune of 2400 -2600 m3/day against the designed capacity of 4000 m3/day. It is informed that the CETP is being operated in the range of 60-65% of capacity since some of their member units are not operating tannery at full capacity.	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
Waste Water: <ul style="list-style-type: none"> • To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical biological treatment system (conventional aeration and MBR) followed by Ultra filtration system, R.O. plant and Multi effect Evaporator.</p> <p>The CETP has constructed Secured Land Fill(SLF) of capacity 115000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units</p>	<ul style="list-style-type: none"> ➤ During the inspection it was observed that, the unit is partly treating through MBR and partly treating through conventional aeration system. Part of secondary treated effluent is treated through R.O. The R.O. reject is being mixed with secondary treated effluent and discharged into Palar River. ➤ MEE was found commissioned and taken for trail run. ➤ The SLF was found one fourth was filled with hazardous waste, but no proper approach/ramp is made for scientific disposal. In the absence of proper approach, the Hazardous waste is found dumped adjacent to SLF. It is informed that temporarily HW is being dumped adjacent to SLF and same is being disposed to SLF with the help of tipper. Stagnated water was found in many pockets of SLF. No proper leachate collection system is provided. ➤ The old H.W. dumping site is exist near to SLF, in that huge quantity of H.W. is lying without proper capping ➤ The surface runoff from old dumping site and temporary dumping of hazardous waste adjacent to SLF may cause ground water as well as surface water pollution in the surrounding area.

<p>To install DG Sets :</p> <ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 1110 KVA of 02 no. and 380 KVA of 01 no.</p>	<p>➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.</p>
 <p>Fig 51: R.O</p>	 <p>Fig 52: MEE under repair</p>	 <p>Fig 53: R.O. reject stored in Lagoon</p> <p>Fig 54: SLF</p>

4.	Pernambut Tannery Effluent Treatment Co. Ltd., Bakkalapalli sector, Pernambut: The CETP has 36 active members and receiving the effluent in the range 500-600 m ³ /day against the designed capacity of 01 MLD. It is informed that the CETP is being operated in the range of 50-60% capacity since some of their member units are not operating tannery at full capacity due to lean season.	
CEPI Action Plan	Implementation Status	Observation of the Inspection Team
Waste Water: <ul style="list-style-type: none"> To install physical, chemical, biological treatment followed by ZLD system to prevent ground water, surface water and soil pollution. 	<p>The CETP has installed physical, Chemical, biological treatment system followed by Ultra filtration system, R.O. plant and Multi effect Evaporator.</p> <p>The CETP has constructed Secured Land Fill (SLF) of capacity 20000 m³ to dispose their ETP sludge and to dispose hazardous waste generated from their member units.</p>	<ul style="list-style-type: none"> ➤ The CETP is operating Physical, Chemical, biological treatment system and Ultra filtration system regularly. R.O. plant was found under trail run and erection of MEE was under progress. ➤ Presently part of secondary treated effluent being treated through R.O., the reject is being mixed with part of secondary treated effluent and discharging into drain which ultimately joins the Palar River. ➤ The team has made physical verification, for working condition of control measures, in- depth monitoring is required. ➤ Stagnated water was found in many pockets of SLF, no proper leachate collection system is provided.
To install DG Sets : <ul style="list-style-type: none"> To install adequate DG sets at CETP and at pumping stations to avoid over flow of untreated effluent during power failure. 	<p>The CETP has installed DG sets of capacity 320 KVA of 01 no. and 125 KVA of 01 no.</p>	<ul style="list-style-type: none"> ➤ The CETP has installed DG sets with acoustic enclosures and exhaust system.



Fig 63: R.O. System under trial run



Fig 64: MEE under progress



Fig 65: SLF



Fig 66: DG Set

CEPI Scores

CEPI Scores in 2009														
SI no.	Environment	Source			Path way				Receptor				High risk Factor	Air CEPI
		A1	A2	A	B1	B2	B3	B	C1	C2	C3	C		
1	Air	5.75	5.00	28.75	3.00	4.50	3.00	10.50	5.00	3.00	5.00	20.00	10.00	69.25
2	Water	3.00	5.00	15.00	7.75	4.50	3.00	15.25	5.00	3.00	5.00	20.00	15.00	65.25
3	Land	3.00	5.00	15.00	4.00	3.00	3.00	10.00	5.00	3.50	5.00	22.50	15.00	62.50
CEPI Score = $i_m + \{(100-i_m) * (i_2/100) * (i_3/100)\} = 69.25 + \{(100 - 69.25) * (65.25/100) * (62.50/100)\} = 81.79$														
CEPI Scores in 2011														
1	Air	5.75	5.00	28.75	4.00	6.00	3.00	13	5.00	4.00	5.00	25.00	10.00	76.75
2	Water	3.00	5.00	15.00	7.50	6.00	3.00	16.50	5.00	4.00	5.00	25.00	15.00	71.50
3	Land	3.00	5.00	15.00	2.00	3.00	3.00	8.00	5.00	1.00	5.00	10.00	15.00	48.00
CEPI Score = $i_m + \{(100-i_m) * (i_2/100) * (i_3/100)\} = 76.75 + \{(100 - 76.75) * (71.50/100) * (48.00/100)\} = 84.73$														
CEPI Score in 2013														
1	Air	5.75	5.00	28.75	2.00	6.00	3.00	11	5.00	1.00	5.00	10.00	10.00	59.75
2	Water	3.00	5.00	15.00	7.50	6.00	3.00	16.50	5.00	4.00	5.00	25.00	15.00	71.50
3	Land	3.00	5.00	15.00	2.00	3.00	3.00	8.00	5.00	1.00	5.00	10.00	15.00	48.00
CEPI Score = $i_m + \{(100-i_m) * (i_2/100) * (i_3/100)\} = 71.50 + \{(100 - 71.50) * (59.75/100) * (48.00/100)\} = 79.67$														

CEPI Scores Cuddalore:

CEPI Scores in 2009														
SI no.	Environment	Source			Path way				Receptor				High risk Factor	CEPI
		A1	A2	A	B1	B2	B3	B	C1	C2	C3	C		
1	Air	3.00	5.00	15.00	3.00	3.00	3.00	9.00	5.00	3.00	5.00	20.00	10.00	54.00
2	Water	3.00	5.00	15.00	7.75	4.50	3.00	15.25	5.00	3.00	5.00	20.00	15.00	65.25
3	Land	4.00	5.00	20.00	3.00	3.00	3.00	9.00	5.00	3.00	5.00	20.00	15.00	64.00
CEPI Score = $i_m + \{(100-i_m) * (i_2/100) * (i_3/100)\} = 65.25 + \{(100 - 65.25) * (64.00/100) * (54.00/100)\} = 77.26$														
CEPI Scores in 2011														
1	Air	3.00	5.00	15.00	2.00	3.00	3.00	8.00	5.00	1.00	5.00	10.00	10.00	43.00
2	Water	3.00	5.00	15.00	1.00	6.00	3.00	10.00	5.00	1.00	5.00	10.00	15.00	50.00
3	Land	5.50	5.00	27.50	4.00	3.00	3.00	10.00	5.00	3.00	5.00	20.00	15.00	72.50
CEPI Score = $i_m + \{(100-i_m) * (i_2/100) * (i_3/100)\} = 72.50 + \{(100 - 72.50) * (50.00/100) * (43.00/100)\} = 78.41$														
CEPI Score in 2013														
1	Air	3.00	5.00	15.00	2.00	3.00	3.00	8.00	5.00	1.50	5.00	12.50	10.00	45.50
2	Water	3.00	5.00	15.00	2.00	6.00	3.00	11.00	5.00	1.50	5.00	12.50	15.00	53.50
3	Land	5.50	5.00	27.50	2.00	3.00	3.00	8.00	5.00	1.00	5.00	10.00	15.00	60.50
CEPI Score = $i_m + \{(100-i_m) * (i_2/100) * (i_3/100)\} = 60.50 + \{(100 - 60.50) * (53.50/100) * (45.50/100)\} = 70.12$														

CEPI Scores Manali:

CEPI Scores in 2009														
SI no.	Environment	Source			Path way				Receptor				High risk Factor	CEPI
		A1	A2	A	B1	B2	B3	B	C1	C2	C3	C		
1	Air	5.00	5.00	25.00	6.00	3.00	3.00	12.00	3.00	4.00	0.00	12.00	15.00	64.00
2	Water	3.00	5.00	15.00	8.00	3.00	3.00	14.00	3.00	5.00	5.00	20.00	10.00	59.00
3	Land	2.00	5.00	10.00	7.75	3.00	3.00	13.75	3.00	4.75	5.00	19.25	15.00	58.00
CEPI Score = $i_m + \{(100-i_m) * (i_2/100) * (i_3/100)\} = 64.00 + \{(100 - 64.00) * (59.00/100) * (58.00/100)\} = 76.32$														
CEPI Scores in 2011														
1	Air	5.50	5.00	2.50	7.50	3.00	3.00	13.50	5.00	4.50	0.00	22.50	15.00	78.50
2	Water	3.00	5.00	15.00	7.75	3.00	3.00	13.75	5.00	4.75	5.00	28.75	10.00	67.50
3	Land	3.00	5.00	15.00	8.00	3.00	3.00	14.00	5.00	4.50	5.00	27.50	15.00	71.50
CEPI Score = $i_m + \{(100-i_m) * (i_2/100) * (i_3/100)\} = 78.50 + \{(100 - 78.50) * (71.50/100) * (67.50/100)\} = 88.88$														
CEPI Score in 2013														
1	Air	5.50	5.00	27.50	2.00	3.00	3.00	8.00	5.00	1.00	0.00	5.00	15.00	55.50
2	Water	3.00	5.00	15.00	8.00	3.00	3.00	14.00	5.00	5.00	5.00	30.00	10.00	69.00
3	Land	3.00	5.00	15.00	2.00	3.00	3.00	8.00	5.00	1.00	5.00	10.00	15.00	48.00
CEPI Score = $i_m + \{(100-i_m) * (i_2/100) * (i_3/100)\} = 69.00 + \{(100 - 69.00) * (55.50/100) * (48.00/100)\} = 77.26$														