



Inspection report on status of implementation of CEPI Action Plans at Cuddalore 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 indentified by CPCB. The details of the industrial clusters/areas were further specified in the office memorandum dated 15.03.2010

The SIPCOT Industrial Complex, Cuddalore was established during the year 1984, it has Phase – I and Phase – II where Textile processing, Pharmaceuticals, Dye, Chemicals, Pesticides and miscellaneous Industries are located. The SIPCOT Industrial Complex (Phase –I & Phase – II), Cuddalore was categorized as critically polluted industrial cluster since the estimated CEPI score of this industrial cluster was **77.45** 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/Clusters	Air	Water	Land	CEPI Score
SIPCOT (Phase I & II), Cuddalore, Tamil Nadu	54.00	65.25	64.00	77.45

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. As per the direction of CPCB, TNPCB formed Local Stake Holder Committee and convened the meeting with the SIPCOT members and Local Stake Holder's to implement the action plans to the Environmental quality in the critically polluted area.

In accordance with the interim assessment of SIPCOT industrial complex, Cuddalore by CPCB through monitoring and information received from TNPCB **during 2011, the CEPI Score was re- estimated and found reduced from 77.45 to 54.69.**

Industrial Area/Clusters	Air	Water	Land	CEPI Score
SIPCOT (Phase I & II), Cuddalore, Tamil Nadu	28.00	50.00	33.50	54.69

Based on the action taken by TNPCB, the decrease in the CEPI score and the recommendations received from the CPCB, Ministry of Environment & Forests, Government of India lifted the moratorium on February 15, 2011.

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 Cuddalore District, T.N.

In this regard officials of CPCB, ZO (South), Bangalore had meeting with Shri Raja, District Environmental Engineer, TNPCB, Cuddalore District on May 15, 2012. **In the meeting District Environmental Engineer informed that, no expert committee was formed, but the meeting was convened with the Local stake holders and with the SIPCOT members.** The report on status of implementation of short

term and long term action points and progress achieved was provided. In the meeting it was decided to inspect the 19 highly polluting industries and 04 industries that were closed, to verify the status of Hazardous waste disposal. Following officials from CPCB, ZO (south), Bangalore and TNPCB, Cuddalore District Regional Office were jointly inspected the industries and CETP's during May 15-17, 2012;

1. Mrs. H.D. Varalaxmi, EE, CPCB, ZO Bangalore
2. Mrs. Poornima, B.M. AEE, CPCB, ZO Bangalore
3. Mr. A. Romalt Terric Pinto Fdo, AEE, TNPCB, Regional Office, Cuddalore
4. Mr. K. Indra Kumar, Secretary, SIPOT, Cuddalore

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

A. The industries located in the industrial Complex, Cuddalore (Critically Polluted area) Which are under Operation

1. Clariant Chemicals (India) Ltd.: The unit is manufacturing the CHLORANIL in the tune of 85 tonnes/month, BLUE PIGMENTS in the tune of 110 tonnes/month, FAST COLOUR BASES in the tune of 10 tonnes/month and NAPHTOLS.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Waste water:</p> <ul style="list-style-type: none"> • Full scale Physico Chemical treatment units • Sensors – EMFM & pH of effluent discharge into Sea 	<ul style="list-style-type: none"> • The unit has physico - chemical followed by biological treatment units. <p>The final treated effluent is being discharged into sea; the unit has its own Marine disposal system. The unit has installed Electro Magnetic Flow Meter & pH sensors to asses the quantity of effluent and quality of effluent discharged to sea and the same is connected to TNPCB Care Air Centre.</p>	<p>It was informed that waste water generation is in the tune of 600 -700 m³/day, during inspection no effluent was pumping to marine disposal system.</p> <p>Taken steps to segregate the Blue Color Within the plant to eliminate blue colour in the effluent.</p>




<p>Source Emission:</p> <ul style="list-style-type: none"> Proposed to go for Bio-fuel Online 02 no. TVOC, Chlorine & SPM monitoring system APC measures – Scrubber, cyclone separator & wet scrubber & Stack. 	<ul style="list-style-type: none"> The unit has converted 03 ton Lignite Fired Boiler to Bio Fuel The unit has installed 01 TVOC and Chlorine monitoring system APC has been installed before CEPI. Two Stage Scrubber In Chloranil Plant is installed to Avoid Chlorine Gas Escape to The Atmosphere Wet Scrubber In Blue Plant is installed to avoid the Acidic Vapour escape to the Atmosphere Dust Extraction Systems such As Reverse Jet Filter , Bag Filter is installed in Blue Plant to Avoid the dust carry over to the Atmosphere. Powder Handling Systems Such As Auto Powder Transfer System From Bags To Silo / Reactors. 	<ul style="list-style-type: none"> During inspection the unit informed that, due to conversion of Lignite to Bio fuel, the SO₂ level has gradually decreased from 80.0 mg/Nm³ to 9.0 mg/Nm³. One TVOC meter in upward wind direction has been installed and connected to Care Air Centre, the unit informed that, another one will be installed by May 31, 2012. The SPM sensors to Boiler stack has not been installed and the unit members informed that, it will be completed by June 2012.
<p>Solid Waste/Hazardous Waste:</p> <ul style="list-style-type: none"> Disposal of ETP sludge to Cement industries 	<ul style="list-style-type: none"> Sold to Cement industries and brick manufacturing industries 	<p>No Manifestos are provided in support of selling ETP sludge into cement industries/brick manufacturing.</p>
 <p>Fig no. 1 : Scrubber installed in chlorine plant</p>	 <p>Fig no 2: Online chlorine monitoring</p>	 <p>Fig no. 3 : On line TVOC meter</p>



Fig 4: Wet scrubber to avoid acidic vapour



Fig 5: pH on line meter



Fig 6 : Hazardous waste storage yard

2 Tanfac Industries Ltd. (AlF₃ Plant) (Cryolite Plant) (Synthetic Organic Chemicals): The unit is a joint venture with TIDCO, and was established in the year 1985. It has 03 plants inside the premises viz. AlF₃ plant, Cryolite Plant, and the Synthetic Organic Chemical (SOC) Plant. The unit member informed that, the Cryolite plant has been dismantled and not in use. In AlF₃ plant, they are manufacturing Anhydrous Hydrofluoric Acid and Aluminium Fluoride. In Synthetic Organic Chemical plant, the products manufacturing are Sulphuric Acid, Oleum and Specialty Chemicals. The unit is generating 2.5 MW power from the waste heat generated from Sulphuric Acid Plant.

The unit is generating 600-700 m³ effluent from AlF₃ plant and claims zero discharge in SOC plant, the treated effluent being discharged to sea through CUSEC LTD, which collects the treated trade effluent from industries through dedicated pipelines network, sumps and pipeline to discharge into sea at a distance of about 1 km into sea.

CEPI Action Plan

Implementation Status

Observation of the Inspection Team

Waste Water:

- Full scale Physico Chemical treatment units
- Sensors – EMFM & pH of effluent discharge into CUSECS

- The unit has ETP consisting of collection tank, neutralization tank, Clariflocculator, lime preparation tank, filter press, sand filter and the treated effluent tank.
- The effluent generated from the AlF₃ Plant, Cryolite Plant is treated and sent to CUSECS for Sea disposal.
- The unit has installed sensors for effluent discharge and pH in treated water sump
- The effluent generated from the Synthetic Organic Chemicals plant is treated in the unit and as ZLD system having MEE and AFTD of 130

- The unit informed that, the Synthetic Organic Chemicals plant is operated only for two months in a year.
- During inspection no effluent was pumping to CUSECS. As per the record maintained by the CUSECS the unit is meeting the prescribed standards of marine disposal.




	m ³ /day capacity.	
<p>Source Emission:</p> <ul style="list-style-type: none"> • Dry Scrubber system proposed • Online Hydrogen Fluoride, SO₂, & SPM monitoring system • APC measures – Cyclone separator, Bag filter, Scrubber, Dust Collector, Cyclone dust collector followed by scrubber, bag filter and cyclone separator & Stack, Packed scrubber & venture scrubber, vent condensers. 	<ul style="list-style-type: none"> • Installed the dry scrubber made of special alloy. Alumina is added to the 3rd bed which adsorbs the lean HF escaping from the AlF₃ reactor. • The above Alumina gets converted to product, thereby reducing the HF emission. • The online Hydrogen Fluoride, SO₂, & SPM monitoring system has been installed and connected to TNPCB Care Air Centre 	<p>➤ During the inspection it was observed that, the sulphur residue about 400 metrics tons was stored in the unit premises</p>
<p>Solid Waste/Hazardous Waste:</p> <ul style="list-style-type: none"> • Disposal of ETP sludge to Cement industries 	<ul style="list-style-type: none"> • Since 18 months Lime sludge is being Sold to Cement industries 	<p>No Manifestos are provided in support of selling ETP sludge into cement industries/brick manufacturing.</p>
 <p>Fig 7: Dry Scrubber to absorb HF</p>	 <p>Fig 8: Activated Alumina bed</p>	 <p>Fig 9 : Online VOC meter</p>



Fig 10: Hazardous waste Storage yard



Fig 11: Spent oil Storage



Fig 12: Spent Catalyst

3 **Loyal Super Fabrics:** The unit is engaged in textile dyeing and manufacturing Knitting fabrics in the tune of 5 tons /day and woven fabrics in the tune of 05 tons/day. The unit is generating 225 m³/day of effluent from knitting process and 360 m³/day of effluent from woven process. It has two boilers and used firewood as fuel.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Wastewater:</p> <ul style="list-style-type: none"> • Full scale Physico Chemical treatment units • Sensors – EMFM & pH of effluent discharge into CUSECS 	<ul style="list-style-type: none"> • The unit has ETP comprising of collection tank, neutralization tank, electro chemical reactor, primary clarifier, biological reactor and the treated effluent sump, from which it is sent to CUSECS for Sea disposal. 	<ul style="list-style-type: none"> ➤ During inspection it was observed that, the housekeeping in the process area and in the ETP area was found to be very poor. ➤ The team has made physical verification, for working condition of control measures, in-depth monitoring is required. ➤ The unit member informed that, the ETP sludge is been sent to Madras Cement Industry. But no Manifestos are provided /or shown during the inspection.
<p>Source Emissions:</p> <ul style="list-style-type: none"> • APC measures –Dust Collectors & Common Wet bottom scrubber. 	<ul style="list-style-type: none"> • The unit has installed online SPM monitoring system for the two boilers (firewood) and is connected to TNPCB Care Air Centre • APC measures were implemented before CEPI action plan 	

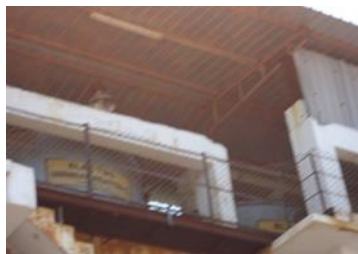


Fig 13: Electrochemical reactors for removing colour of the effluent



Fig 14: Sludge Drying Beds with accumulated sludge






Fig 15: Wet Scrubber












Fig 16: Online SPM connected to stack

4. Pandian Chemicals Ltd.: The unit is manufacturing 200 tons/year of Ammonium Per chlorate and Sodium Chloride as by- product by using Sodium Chlorate and Ammonium Fluorite as raw material. The unit sells the entire product to Defense Department of India. The unit uses 24 KLD of water for the process as well as for washing floors and generates 10 KLD of effluents. The unit has one Boiler of capacity 01 Ton/hr and uses firewood as a fuel. .

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Wastewater:</p> <ul style="list-style-type: none"> • Full scale Physico Chemical treatment units • Sensors – EMFM & pH of effluent discharge into CUSECS 	<ul style="list-style-type: none"> • The unit has installed physical and chemical treatment units to treat the 10 KLD effluent generated. • To overcome the TSS problem the unit has installed pressure filtration with the direction of TNPCB. • The unit has installed online monitoring system to check the pH and effluent sent to CUSECS and is connected to TNPCB Care Air Centre. 	<p>➤ The team has made physical verification, for working condition of control measures, in-depth monitoring is required.</p>
<p>Source Emissions:</p> <ul style="list-style-type: none"> • Online Chlorine monitoring 	<ul style="list-style-type: none"> • The online Chlorine monitoring system has been installed and is connected to TNPCB Care Air 	<p>➤ During inspection online chlorine monitoring system was showing 8 ppm.</p>

<p>system</p> <ul style="list-style-type: none"> • APC measures – Packed bed Alkali scrubber, Cyclone separator & in built bag filter chamber followed by Stack. 	<p>Centre.</p> <ul style="list-style-type: none"> • The unit has a boiler (firewood) of capacity 01 ton/hr and has installed cyclone separator. 	
 <p>Fig 17: Alkali Scrubber</p>	 <p>Fig 18: Pressure sand filter</p>	 <p>Fig 19: Online Chlorine meter</p>
<p>5. Arkema Peroxides India Pvt. Ltd.: The unit is manufacturing organic peroxides by using Hydrogen peroxide, sodium hydroxide , Organic chloride and sodium peroxide as raw materials. The unit is .generating 80-90 m³/day of trade effluents having high TDS. The unit representatives members informed that, around 08-10 tons/year of ETP waste is generated and it is sent to Gummidipoondi TSDF once in 03 months.</p>		
<p>CEPI Action Plan</p>	<p>Implementation Status</p>	<p>Observation of the Inspection Team</p>
<p>Wastewater:</p> <ul style="list-style-type: none"> • Full scale Physico Chemical treatment units • Sensors – EMFM & pH of effluent discharge into CUSECS 	<ul style="list-style-type: none"> • The unit has ETP comprising of Collection sump, Neutralisation tank, Equalisation tank, Anaerobic tank, Aerobic tank, Clarifier, Pressure Sand filter and Sludge drying bed to treat effluent generated. • To reduce the level of TSS in treated effluent, two Pressure Sand Filter are installed at the outlet of the ETP • The treated trade effluent is sent to CUSECS for Sea Disposal 	<ul style="list-style-type: none"> ➤ During inspection no effluent was pumping to CUSECS. As per the record maintained by the CUSECS the unit is meeting the prescribed standards of marine disposal. ➤ The team has made physical verification, for working condition of control measures, in-depth monitoring is required.

	<ul style="list-style-type: none"> The unit has installed EMFM and pH sensor and is connected to TNPCB Care Air Centre. 	
 <p>Fig 20: Hazardous waste storage yard</p>	 <p>Fig 21: Pressure sand filter</p>	 <p>Fig 22: Treated water sump to pump to CUSECS</p>
<p>6.</p>	<p>Bayer Material Science Pvt. Ltd.: The unit uses Polyol, MDI, BDO and Octanol as raw material to manufacture Thermal Plastic Poly unit as a product. The production capacity is 210 tons/month. The unit generates 15 m³/day of trade effluent.</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"> Full scale Physico Chemical treatment units Sensors – EMFM & pH of effluent discharge into CUSECS 	<ul style="list-style-type: none"> The unit has ETP comprising of Collection Tank, Neutralization tank, aeration, tube settler and treated water tank to treat 15 m³/day of effluent generated. The treated effluent is being discharged to sea through CUSECS The unit uses MDI as one of the raw material stored in a barrel. This barrel needs to be decontaminated before selling to the traders as it is hazardous in nature. Around 100-150 g of hazardous waste is generated per barrel of capacity 200 kg, per month around 60 kg of chemical residue is generated; it was informed 	<ul style="list-style-type: none"> ➤ During inspection no effluent was pumping to CUSECS. As per the record maintained by the CUSECS the unit is meeting the prescribed standards of marine disposal. ➤ The team has made physical verification, for working condition of control measures, in-depth monitoring is required.

	<p>that, they sent it to TNPCB TSDF for incineration.</p> <ul style="list-style-type: none"> • The unit has installed EMFM and pH sensor and is connected to TNPCB Care Air Centre. • The unit member informed that, they are planning for ZLD comprising of RO and Evaporator. 	
<p>Source Emission:</p> <ul style="list-style-type: none"> • APC measures – Wet Scrubber followed by Stack. 	<ul style="list-style-type: none"> • The unit has installed Online SO₂ monitoring to the stack of Boiler (firewood). 	<p>➤ Online SO₂ Monitoring system is yet to connect TNPCB Care Air Centre</p>
 <p>Fig 23: Wet Scrubber product silo</p>  <p>Fig 26: Collection of Chemical residue after washing MDI Barrels</p>	 <p>Fig 24: wet scrubber connected for extruder</p>  <p>Fig 27: Online SO₂ meter</p>	 <p>Fig 25: Empty MDI Barrels stored</p>  <p>Fig 28: Ambient Air Quality monitoring System</p>




7.	Pioneer Jellice India Pvt. Ltd.: The unit is manufacturing Gelatin as a product and Dicalcium Phosphate as a byproduct, using animal Bone as a raw material. The production capacity is 225 tons/month and 1200 KL/day of trade effluent is generated. The main source of effluent generation is from the raw material washing, product washing and equipment washings.		
CEPI Action Plan		Implementation Status	Observation of the Inspection Team
Wastewater: <ul style="list-style-type: none"> • Full scale Physico Chemical treatment units • Sensors – EMFM & pH of effluent discharge into CUSECS 		<ul style="list-style-type: none"> • The unit has ETP comprising of Collection sump, primary clarifier, Anaerobic digester, extended aeration system, De-Nitrification, Secondary Clarifier. • The treated effluent being discharged to sea through CUSECS. The unit has installed EMFM, online pH meter and online temperature recorder and the same is connected to TNPCB Care Air centre. 	<ul style="list-style-type: none"> ➤ The unit has plan to install Ultrafiltration followed by R.O. to utilise R.O. permeate in the process and boiler.
Source Emission: <ul style="list-style-type: none"> • Incineration through Boiler • APC measures – Mechanical dust collector & wet bottom scrubber. 		<ul style="list-style-type: none"> • To reduce animal Bone odour, suction pipe arrangements is provided in the bone storage godown and the sucked odorous gas is being connected in the boiler FD fan for incineration • Mechanical dust collector and wet scrubbers are installed in both the boilers. 	<ul style="list-style-type: none"> ➤ During inspection no odours experienced in the premises. The unit has installed anti odour spray system at bone washing section.
 <p>Fig 29 : UASB system</p>		 <p>Fig 30: Bio Gas Flaring system</p>	 <p>Fig 31: Extended aeration system and De-nitrification</p>



Fig 32: Blower to suck the odourous air from the godown UASB



Fig 33: Arrangements made for Burning of odours gases in boiler



Fig 34: Anti odour spray system installed at Bones washing section

8. Tagros Chemicals India Ltd. (unit-I, unit-II, and unit-III): The unit started in the year 1997-1998 and has three plants inside the premises. **The unit representative informed that, plant I & II are effluent generating and third plant is a formulation plant and no effluent is generated.** The unit is manufacturing 04 Insecticides namely Cypermethrin, Permethrin, Alpha Cypermethrin & Deltamethrin and 01 Fungicide viz. Hexaconazole. The unit generates 150 kg of waste per ton of the product. Around 780 tons of incinerable waste is stored in the premises, the unit members informed that, around 30 metric tons of waste is sent to ACC Cement, Maddurakai for Co-processing and waiting for their reply. The unit has four Boilers, 01 is Coal fired of 08 tons/hr capacity and other three are wood fired of 04+04+06 tons/hr capacity and are used as a standby as informed by the unit members.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<p>Waste Water:</p> <ul style="list-style-type: none"> • Neutralization, MEE & Centrifuge • Sensors – EMFM & pH of effluent discharge into CUSECS 	<ul style="list-style-type: none"> • The unit has Treatment system comprises the Collection sump, Equalisation tank, Neutralisation tank followed by Multi Effect Evaporator and ATFD system. • The unit has installed EMFM & online pH meter for treated sewage which is being sent to CUSECS for sea disposal. 	<ul style="list-style-type: none"> ➤ During inspection MEE and ATFD was in operation. ➤ The team has made physical verification, for working condition of control measures, in-depth monitoring is required.
<p>Source Emissions:</p> <ul style="list-style-type: none"> • Solvent recovery system • APC measures – HCL Scrubber 	<ul style="list-style-type: none"> • The unit has installed Solvent recovery systems • The unit has installed HCL Scrubber and SO₂ 	<ul style="list-style-type: none"> ➤ The team has made physical verification, for working condition of control measures, in-

<p>followed by SO₂ Scrubber, Dust collector, Cyclone separator & Wet Scrubber.</p>	<p>scrubber in the process section. Cyclone separator, wet scrubber and dust collector in the boiler section.</p>	<p>depth monitoring is required.</p>
<p>Solid Waste/Hazardous Waste:</p> <ul style="list-style-type: none"> • Disposal of process residue and other ETP sludge to Cement industries 	<ul style="list-style-type: none"> • No Steps are taken to disposal of Hazardous wastes and storing in the storage yard. 	<p>The unit informed that Hazardous waste generation is 150kg/tom of product and it has Calorific value of 2000. Huge quantity (780 MT)of hazardous waste was found stored in the two storage yard. Since the establishment of unit the hazardous waste generated is not being disposed.</p>
<div data-bbox="241 711 600 959" data-label="Image"> </div> <p>Fig. 35: MEE</p> <div data-bbox="219 1066 568 1310" data-label="Image"> </div> <p>Fig 38: Vent condesor for CTC</p>	<div data-bbox="757 711 1122 951" data-label="Image"> </div> <p>Fig. 36: ATFD</p> <div data-bbox="723 1059 1133 1318" data-label="Image"> </div> <p>Fig 39: Vent chiller</p>	<div data-bbox="1440 715 1776 951" data-label="Image"> </div> <p>Fig. 37: Solvent recovery system (Vent Condenser for Hexane)</p> <div data-bbox="1480 1066 1830 1302" data-label="Image"> </div> <p>Fig 40: TEA Recovery</p>



Fig. 41: HCl and SO₂ Scrubber



Fig. 42 : Carbon bed for Ejector sump



Fig 43 : Bromine recovery fro HBr Solution



Fig. 44: Hazardous Waste storage shed (old)



Fig. 45: Hazardous Waste storage shed (New)



Fig. 46: VOC online monitoring system

9. Shasun Chemicals and Drugs Ltd.: The key products manufacturing in this unit are Ranitidine in the tune of 20 tons/month ,Gastrointestine drugs in the tune of 40 t/day and Myacitidine in tune of 01-02 tons/month. The unit generates 50 KLD of trade effluent. No steps are taken to segregate the High TDS and Low TDS effluent at the source. The unit has two Boilers of capacity 10 tons/hr, one is Briquettes fired and another is Furnace oil fired.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
Wastewater: <ul style="list-style-type: none"> Full scale Physico Chemical treatment units, RO, MEE & ATFD Sensors – RO permeate EMFM & 	<ul style="list-style-type: none"> The unit has installed physico-chemical followed by biological treatment system, R.O. followed by EMFM and ATFD 	<ul style="list-style-type: none"> ➤ During inspection it was observed that High TDS and Low TDS effluent being collected in common Tank, House keeping at ETP was found very poor and R.O. and ATFD was

pH		not in operation, partially concentrated effluent being stored in the lagoon.
<p>Source Emissions:</p> <p>1.Reduce VOC emissions by</p> <ul style="list-style-type: none"> • .Bio filter modification with activated carbon filter • Aeration tank to be covered and vent connected to carbon filter <p>2. Reduction of VOC like chloroform Reduced by operational</p> <p>3. Modification by change of raw material Reduced the emission with modified distillation system as the trials taken failed in desired Yield & spec</p> <p>4. APC measures – Common Scrubber, primary & secondary</p>	<ul style="list-style-type: none"> • The unit has Replaced Bio filter with Multi stage Carbon Adsorption Towers with primary, secondary and tertiary carbon beds with standby facility to prevent any VOC emissions in process area. • To control odour from Aeration tanks, to slabs are provided and the vapour from these tanks are sucked by means of blower and absorbed through activated carbon. • The transfer of mass, modified from pressure (Air/Nitrogen) transfer to pump transfer. Vent heat exchangers for the reactors/Tanks to condense the solvent Vapors . • Mercaptan scrubber changed from FRP to SS with minimum flange joints. • All-solvent storage tanks provided with flame arrestor and are in closed system of transfer through pumps fitted with Mechanical seals. • Trial were taken for replacing Chloroform with other solvents, like TCE, IPA, toluene, Ethyl Acetate, which did not yield the desired results and spec of product did not meet where in we got new impurities, which are in un accepted levels. • Installed primary secondary activated carbon filter & tail end SSACF stack. 	<p>not in operation, partially concentrated effluent being stored in the lagoon.</p> <ul style="list-style-type: none"> ➤ The unit also installed 3 online VOC monitoring system, all VOC analyser were fixed at higher altitude and the same were accessible for verification. ➤ The team has made physical verification, for working condition of control measures, in-depth monitoring is required.

<p>activated carbon filter and tail end SS ACF, Venturi Scrubber, two stage packed bed scrubber, Scrubber & stack.</p>	<ul style="list-style-type: none"> • Venturi scrubber and two stage packed bed scrubber is provided to prevent mercaptan emissions. 	
<p>Solid Waste/Hazardous Waste:</p> <ul style="list-style-type: none"> • Disposal of ETP sludge, solvent residue and other hazardous wastes to Gumudipundi TSDF, after stabilisation. 	<ul style="list-style-type: none"> • The unit has made provision for stabilisation and storage of hazardous wastes 	<p>➤ During inspection huge quantity of hazardous waste is stored in the storage yard which is required to sent to TSDF. House keeping in the storage yard was found very poor.</p>
<div data-bbox="206 639 490 906" data-label="Image"> </div> <p>Fig 47: Scrubbers provided to control VOC</p> <div data-bbox="219 1018 667 1278" data-label="Image"> </div> <p>Fig 50: Storage of solvent residue</p>	<div data-bbox="741 639 1072 906" data-label="Image"> </div> <p>Fig 48: Aeration tank with top cover</p> <div data-bbox="741 1018 1104 1254" data-label="Image"> </div> <p>Fig 51: Stabilised HW stored in the yard</p>	<div data-bbox="1435 639 2018 866" data-label="Image"> </div> <p>Fig 49: R.O. and ATFD under repair at the time of visit</p> <div data-bbox="1458 1011 1868 1257" data-label="Image"> </div> <p>Fig 52: Poor house keeping at stabilisation pond</p>

10.	Asian Paints Ltd. (Penta Division): The unit is manufacturing 450 tons/month of Penta erythryton as product by using Formaldehyde, Acetaldehyde and Caustic Soda Lye and producing sodium formate as a by-product. The water consumption of the unit is @ of 32 KL/metric ton of product and generates 70 KLD of trade effluent.		
CEPI Action Plan	Implementation Status	Observation of the Inspection Team	
Wastewater: <ul style="list-style-type: none"> • Full scale Physico Chemical treatment units, RO, MEE & ATFD • Sensors – RO permeate EMFM & pH 	<ul style="list-style-type: none"> • The unit has installed full fledge ETP comprises of Physico-chemical, biological treatment system, tertiary lamella filter followed by secondary clarifier followed by UF, RO, MEE and ATFD. • The unit has installed pH meter and EMFM to quantify the RO permeate which is being used for boiler make up and cooling tower make up. 	<ul style="list-style-type: none"> ➤ The secondary treated effluent being treated through UF followed by RO. The RO permeate is being used as boiler make up and cooling tower make up. The R.O. reject is being concentrated through MEE and dried through ATFD . the dried salt is being disposed to Gumudipundi TSDF. 	
Source Emission: <ul style="list-style-type: none"> • To connect all storage tanks vents for reuse • Online SO₂, NO_x, CO & SPM monitoring system • APC measures – Scrubber, Dust Collectors, Multiclone separators & Bag Filters 	<ul style="list-style-type: none"> • The unit has provided ‘tank balancing and vent collection & recycling’ system that has completely eliminated the air emissions on account of breathing. • The unit has installed online Boiler stack SPM analyser, online flue gas SO_x and NO_x analyser and Online TVOC monitor • The unit has installed scrubber, dust collector multiclone separator and bag filters as APC devices at boiler. 	<ul style="list-style-type: none"> ➤ The unit also made the provision of Rupture Disc to Safety Valves at Acetaldehyde storage bullet. ➤ Based on the suggestions of TNPCB the unit has taken up Leak Detection Arrest and Repair work by M/s SGS laboratories. 	



Fig53: Vents connected blower



Fig54: Online VOC meter



Fig 55: Rupture Disc Fig 56: MEE & ATFD
Provided to Acetaldehyde tank

11 **M/s DFE Ltd., (Formerly M/s Brahmar Cellulose Products (P) Ltd.):** The unit has changed its name to **DFE** after collaboration with the Germany Company. The unit produces Micro Crystallise Cellulose and Sodium Carboxyl Cellulose, both in tune of 40 tons/month using Wood Pulp as a raw material. The raw material is imported from the Germany as informed by the unit member. The unit uses 7000 liters of water per batch and processes two batches per day. Around 08 KLD of trade effluent is generated. The unit has 01 Boiler of capacity 4 tons/hr and uses firewood as a fuel.

CEPI Action Plan

Implementation Status






Observation of the Inspection Team



Wastewater:




- Full scale Physico Chemical treatment units, RO, MEE & Solar Evaporation Pan

- The unit has installed ETP comprises of collection tank, chemical dosage tank, primary settler, aeration system, R.O. and MEE

- The secondary treated effluent being treated through R.O. the R.O. permeate being used as boiler make up and R.O. reject being treated concentrated through MEE and concentrated MEE being taken to solar evaporation pan. During inspection no salt is found in the solar evaporation pond .
- It is informed that the salt generated from the solar evaporation pond is being sent to Gumudipundi TSDF. No manifestos are made available at the time of inspection.

<p>Source Emission:</p> <ul style="list-style-type: none"> • APC measures – Cyclone separator & Stack. 	<ul style="list-style-type: none"> • The unit has installed cyclone separator to boiler stack • The has installed online VOC analyser for monitoring VOC in ambient air 	
 <p>Fig 57: R.O. System</p>	  <p>Fig 58: MEE Fig 59: Solar evaporation pond</p>	  <p>Fig 52: Sludge drying beds Fig 53: Online VOC</p>
<p>12</p>	<p>M/s Indo International Fertilizers Ltd., (Formerly M/s GSR Products Ltd): The unit has changed its name as Indo International Fertilizers Ltd. The unit produces DAAM (Di Acetone Acrylamide) in tune of 8.334 T/M, 4HBAGE (4 Hydroxyl butyl Acrylate Glycidyl Ether) in tune of 1.250 T/M and CCDMPA (2-Chloro-5-(4-Chloro-5-difluoro methoxy-1-methylpyrazol-3-yl)-4-fluorophenoxy Acetic acid) in tune of 0.250 T/M. The unit informed that 23.75 kl /day of water required for DAAM production, 23.5kl/day of water required for 4H-BAGE production and 21.15kl/day of water required for CCDMPA production and generates waste water in the tune of 2.5 kl/day.</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"> • Neutralization & Evaporator reactor • Sensors – EMFM & pH of Sewage discharge into CUSECS 	<ul style="list-style-type: none"> • The unit has installed ETP comprises of Neutralisation, sand filter, collection pit, SS reactor and distillation. 	<ul style="list-style-type: none"> ➤ The unit informed that the distilled water from distillation section is being recycled in the process and residue from distillation column sent to drying bed.

<p>Source Emission:</p> <ul style="list-style-type: none"> • APC measures – Packed bed Alkali Scrubber & Venturi Scrubber 	<ul style="list-style-type: none"> • All Process reactors are connected to a Wet Scrubber, Condensers and provided with a double mechanical seal. • All the process reactors are provided with primary and secondary Condensers. For Primary condensers cooling Water/chilled water is the media and secondary condensers chilled brine is the media • VOC Monitor is provided. 	<p>➤ At the time of inspection no industry representatives were available to show the measures taken as per action plan..</p>
 <p>Fig. 54: Mechanical seals provided at process</p>	 <p>Fig 55: Primary and secondary condenser provided in the process</p>	
<p>13</p>	<p>Packaging India Pvt. Ltd.: The unit is engaged in manufacturing Rollers packaging material for their clients like ITC, Pillsbury, Dove, Cadbury, SunsilK Shampoo, Meera Shampoo, Basmati Rice, Vicks etc. the unit manufacturers around 17 Rollers per day. The unit uses 1000 liter/day of water and generates 05 KLD of trade effluent. Around 01 ton/annum of ETP waste is generated and is sent to Gummidipoondi TSDF once in every year as informed by the unit members.</p>	
<p>CEPI Action Plan</p>	<p>Implementation Status</p>	<p>Observation of the Inspection Team</p>
<p>Water:</p> <ul style="list-style-type: none"> • Full scale Physico Chemical treatment units, RO, & Solar Evaporation Pan 	<ul style="list-style-type: none"> • The unit has installed Physico chemical followed by RO and solar evaporation pond 	<p>The treated effluent being treated through RO. The RO permeate is being utilised boiler make up and RO reject being treated through solar evaporation pond and claiming that achieving ZLD.</p>

<p>Air:</p> <ul style="list-style-type: none"> • APC measures – Wet Scrubber & Stack. 	<ul style="list-style-type: none"> • The unit has small boiler with wet scrubber as APC device. 	
		
<p>Fig 56: collection sump</p>	<p>Fig 57: RO and solar evaporation pond for RO reject</p>	<p>Fig 58: Dried salt stored in the storage yard</p>
<p>14.</p>	<p>Chemplast Sanmar Ltd. (PVC Plant): The unit was started in the year 2009. The unit uses Vinyl Chloride Mono as a raw material to manufacture Poly Vinyl Chloride as a product. The production capacity is 221000 tons/annum. The unit uses 4000 m³/day of water and generates 2000-2200 m³/day of trade effluent. The unit has 01 Boiler of capacity 43 tons/hr of coal fired. The unit has installed Continuous Ambient Air Quality Monitoring System in the August 2010 and are monitoring for 05 parameters namely PM 2.5 & 10, CO, O₃, NO, NO₂, NO_x and SO₂.</p>	
<p>CEPI Action Plan</p>	<p>Implementation Status</p>	<p>Observation of the Inspection Team</p>
<p>Wastewater:</p> <ul style="list-style-type: none"> • Full scale Physico Chemical treatment units, RO, MEE & Nutch filter • Sensors – RO permeate EMFM & pH of effluent, EMFM & pH of sewage discharge line and Desalination plant reject discharge EMFM & pH into sea. 	<ul style="list-style-type: none"> • The unit has installed Physic Chemical treatment followed by RO, MEE and Nutch filter • The unit has installed EMFM and Online pH meter and the same is connected to TNPCB air care centre. 	<ul style="list-style-type: none"> ➤ The R.O. reject is being treated through MEE and generating salt of 100 topnnes/annum. It is informed that the salt generated from MEE and DM plant is being sent to Gumudipundi TSDF. ➤ 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"> • Online SPM, SO₂, NO_x, & VCM monitoring system • APC measures – Multi Cyclone followed by wet Scrubber, Bag filter, Reverse jet bag filter, Ben Vent filter, ESP & Stack. 	<ul style="list-style-type: none"> • The unit has installed online SPM, SO₂, NO₂ and VCM monitoring system and the same is connected to TNPCB Care Air Centre. • The unit is installed multi cyclone followed by wet scrubber, bag filter, Reverse jet bag filter and Ben vent filter in the process to control VCM and other VOC's. ESP is installed in Boiler as APCD. 	<p>➤ The unit also installed 2 permanent ambient air quality monitoring stations and one continuous ambient air quality station for monitoring of 5 parameters and the same is connected to Care air Centre. At the time of inspection all parameters were found within the prescribed limit.</p>
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Fig 59: RO system



Fig 60: EMFM installed to quantify the RO reject feed to MEE



Fig 61: Multiple effect evaporator



Fig 62: Steps taken to control VCM and VOC in the process



Fig 63: CAAQM system



Fig 64: Permanent AAQM



Fig 65: Hazardous waste storage yard

B. Status of Closed industries pertaining W.R.T. Hazardous waste, Raw materials, Semi processed materials, process wastes etc., lying in their premises

1. **M/s DSQ Beverages, SIPCOT Industrial Complex:** The unit is under possession of IDBI, Mumbai. The Managing Director SIPCOT required to expedite necessary action for disposal of the stored Ethyl Alcohol of 80 Kl.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<ul style="list-style-type: none"> The stored Ethyl Alcohol has to be lifted from the premises 	<ul style="list-style-type: none"> No action taken, stored in a closed shed with lock & key under the control of Excise Tahsildhar. 	<ul style="list-style-type: none"> ➤ No action taken, it is under possession of IDBI security

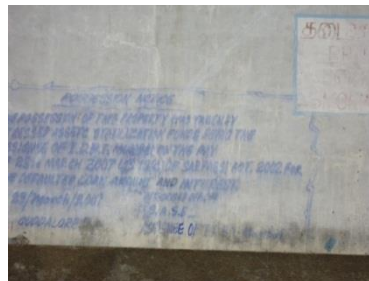


Fig 66: Ethyl Alcohol Storage godown with SEAL and IDBI Notice about their possession


2.	M/s Vardhaman Life Science (P) Ltd., (formerly M/s J.K. Pharma Chem Ltd.), SIPCOT Industrial Complex : The unit was producing bulk drugs, presently the unit was taken over by M/s Vardhaman Life Science and applied for Hazardous waste authorisation and for EIA for change of product.		
CEPI Action Plan		Implementation Status	Observation of the Inspection Team
<ul style="list-style-type: none"> The sludge of 12Ton has to be removed from the ETP. 		<ul style="list-style-type: none"> The ETP sludge from clarifier is removed and collected in HDPE bags and stored under covered shed 	<ul style="list-style-type: none"> ➤ It is informed that for disposal of these waste to TSDF the unit has applied for Hazardous waste authorisation to TNPCB
 <p>Fig 67: The sludge from clarifies is being removed and stored under shed</p>			
3.	M/s Pentafour Products Ltd. (Phosphoric Division): The unit was engaged in manufacturing chemicals and shampoo based products. The raw materials like phosphoric acid -10 KL, sulphur – 100 kg and surfactants – 02 tons were stored in the premises, the managing director SIPCOT to expedite necessary action for the disposal of the raw materials.		
CEPI Action Plan		Implementation Status	Observation of the Inspection Team
<ul style="list-style-type: none"> The stored Phosphoric acid, Surfactants and Sulphur has to be removed from the premises. 		<ul style="list-style-type: none"> No action has been taken from the unit to dispose the stored raw materials. 	<ul style="list-style-type: none"> ➤ Phosphoric acid and surfactants are stored in carboys and kept in open space.



Fig 68: The Carboys contains Phosphoric acid, surfactants and sulphur are kept in open space

4. **M/s Tantech Agro Chemicals Limited:** The TNPCB communicated the unit to dispose the stored chemicals like Acetyl chloride, HCL, Tri Chloroethylene, Iso Butylacetophenone, Furnace oil and ETP Sludge – 120tons.

CEPI Action Plan	Implementation Status	Observation of the Inspection Team
<ul style="list-style-type: none"> To dispose the stored chemicals like Acetyl chloride, HCL, TriChloroethylene, Iso Butylacetophenone, Furnace oil and ETP Sludge – 120tons. 	<ul style="list-style-type: none"> The unit has disposed the stored chemicals and ETP sludge 	<ul style="list-style-type: none"> ➤ During inspection the unit was dismantled and the stored chemicals were disposed to beneficiaries and ETP Sludge was sent to Gummidipoondi TSDF.



Fig 69: Structure being dismantled and entire wastes were disposed


5.	M/s Maruthi Laboratories (P) Ltd.: The unit is under the possession of Tamil Nadu Industrial Investment Corporation.		
CEPI Action Plan	Implementation Status	Observation of the Inspection Team	
<ul style="list-style-type: none"> To dispose the stored Micro Crystalline Cellulose powder of 750 kg from the premises. 	<ul style="list-style-type: none"> No action has been taken, stored in HDPE bags inside in covered shed. The unit has been locked and it is under the control of Tamil Nadu Industrial Investment Corporation 	<ul style="list-style-type: none"> ➤ At the time of inspection Main Gate was locked, it is informed that the unit is under control of TIDCO. 	
 <p data-bbox="465 925 1639 957">Fig 70: The unit locked and in the control of Tamil Nadu Industrial Investment Corporation</p>			
6.	M/s Victory Chemicals Ltd.: Around 3200 tons of Barite Mud Sludge is stored in the unit premises. Studies have been made to send the accumulated barite mud sludge to utilize in the process of cement manufacture.		
CEPI Action Plan	Implementation Status	Observation of the Inspection Team	
<ul style="list-style-type: none"> To dispose the accumulated Barite mud sludge from the premises. 	<ul style="list-style-type: none"> The Barite Mud Sludge has been made as a brick and stored in the unit premises. Studies have been conducted to send to Cement manufacture. 	<ul style="list-style-type: none"> ➤ It is observed that huge quantity of Barite Mud Sludge and its bricks are stored. It is informed that TNPCB asked the unit to explore its utilisation in cement industry. 	



Fig 70: The Barite Mud Sludge made into Bricks and stored in the premises

C. Overall Recommendations :

- (i) The Comprehensive (CEPI) Index score has been reduced from 77.45 to 54.69 and based on that moratorium has been lifted.
- (ii) The Industry specific action plan is more or less completed. However no monitoring has been done for further verification.
- (iii) Issue of Huge quantity of Hazardous waste storage at individual industries is a matter of concern. TNPCB may take up this individual industry wise and explore the possibility of co-processing/disposal at TSDF.
- (iv) TNPCB may formulate an expert Committee and conduct follow-up meeting with all stake holder for continuing the actions already implemented/proposed.

- (v) The TNPCB may be asked to inspect and to carry out detailed monitoring of Source Emissions and Effluent Treatment Systems of individual industries and to submit the reports once in 6 month to CPCB.
- (vi) The TNPCB may be asked keep close watch on quality of treated effluent discharged to Sea through CUSEC Ltd.,