



## **TAMILNADU POLLUTION CONTROL BOARD**



## **FINAL ACTION PLAN REPORT FOR CRITICALLY POLLUTED AREA KURICHI INDUSTRIAL CLUSTER, COIMBATORE**

**NOVEMBER 2010**

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# **ACTION PLAN FOR KURICHI INDUSTRIAL CLUSTER**

## **1.0 INTRODUCTION**

### **1.1 Area Details including brief history (background information)**

Coimbatore District is located in the western part of Tamil Nadu. The District is spread out in an area of 7469 sq.km. The average annual rainfall in the plan is around 700 mm. This District has two Revenue Division, Coimbatore and Pollachi. The District comprises of six taluks namely Coimbatore North, Coimbatore South, Pollachi, Valparai, Mettupalayam and Sulur. The Coimbatore City comes under Corporation administration. Coimbatore is the second largest city in Tamil Nadu. The city is located at 411 meters above mean sea level. Average rainfall is about 612.2 Millimeters. The city is situated on the banks of the River Noyyal. It has population of more than 16 lakhs. The city is also known as Manchester of South India. The city is famous for textile spinning mills, wet grinders, pumps and motors industry sector. To cater the needs of above and to fabricate machineries for the factories, foundry and electroplating sector establishments are emerging.

Kurichi Industrial cluster is located at a distance of 7 km from Coimbatore city. This cluster has two industrial estates developed by SIDCO & private to an extent of 180-acres.

### **1.2 Location**

In Coimbatore District, Kurichi is located at 10°55'11" N latitude and 76°57'35"E longitude comprising of Industrial Cluster. This Industrial cluster is located at distance of 7 km from Coimbatore Corporation. In Kurichi two Industrial estates exist which are developed by SIDCO and Private. Adjoining to this estate Tamilnadu Housing Board has constructed Housing units. This Industrial cluster area spreads over an area of about 180 acres. This cluster comes under the administrative jurisdiction of Kurichi Municipality. This industrial cluster is located on the NH from Coimbatore to Pollachi. The map showing the location of SIDCO industrial cluster in the Coimbatore district map is given in **Figure – 1.1**.

**INDEX PLAN**



**INDEX PLAN**

Coimbatore District





**FIGURE - 1.1**  
**LOCATION OF SIDCO INDUSTRIAL CLUSTER IN COIMBATORE DISTRICT**

### 1.3 Digitized Map with Demarcation of Geographical Boundaries and Impact Zones

The CEPI area is surrounded by Kurichi Housing unit Phase-1 & 2 in west and SW direction, scattered engineering industries, commercial establishments and residential houses in north direction, residential houses of Ganeshapuram in east direction, scattered industries, educational institutions and software park in south direction. The digitized map showing the boundaries of the CEPI area is shown in **Figure – 1.2**. The map showing the impact zone of 2.0 km radius around the CEPI area is shown in **Figure – 1.3**.

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

Central Pollution Control Board has developed a Comprehensive Environmental Pollution Index (CEPI) based on pollution potential of the industries located in industrial estates in our country. As an outcome of this study Kurichi Industrial Cluster in Coimbatore district has been identified as one of critically polluted area with CEPI score of 72.38. Ministry of Environment and Forest, Govt. of India wide memorandum dated 13.1.2010 has declared Industrial Cluster of Kurichi, Coimbatore district as critically polluted area.

No	Industrial Area/clusters	Air	Water	Land	CEPI	
34	Kurichi Industrial Cluster, Coimbatore (Tamilnadu)	62.25	58.75	45.50	72.38	Ac_Ws_Ln*

**\* Ac-Air Critical; Ws-Water Severe; Ln-Land Normal**

The CPCB has instructed to prepare an action for improving the environmental quality of this said area vide their letter dt: 18.05.2010.



**FIGURE – 1.2**  
**MAP SHOWING THE BOUNDARIES OF THE CEPI AREA**

**FIGURE – 1.3**

**MAP SHOWING THE IMPACT ZONE OF 2.0 KM RADIUS AROUND THE CEPI AREA**

## 1.5 Total population and sensitive receptors

Total Population of Kurichi is 76,794 as per 2001 censuses. There are no critical sensitive receptors like hospitals, educational institutions, courts in the CEPI area. But there are certain sensitive receptors like hospitals, educational institutions, are exist in the impact zone of 2.0 km radius. The list of hospitals existing in 2 km radius around the CEPI area is given below:

1. N.R.P. Hospital, Sundarapuram
2. Sri Balaji Hospital, Sundarapuram
3. Abirami Hospital, Sundarapuram
4. Abinand Hospital, Sundarapuram
5. G.S. Hospital, Sundarapuram
6. Ganapathi Poly Clinic, Sundarapuram
7. St Mary's Hospital, Podanur
8. Koushikha Hospital, Podanur
9. S.M. Clinic, Podanur

The list of educational institutions existing with in 2 KM from the boundary of the CEPI area is given below:

1. Rathinam College of Arts & Science, Eachanari
2. Meenakshi Nursing College
3. KPM School, Eachanari

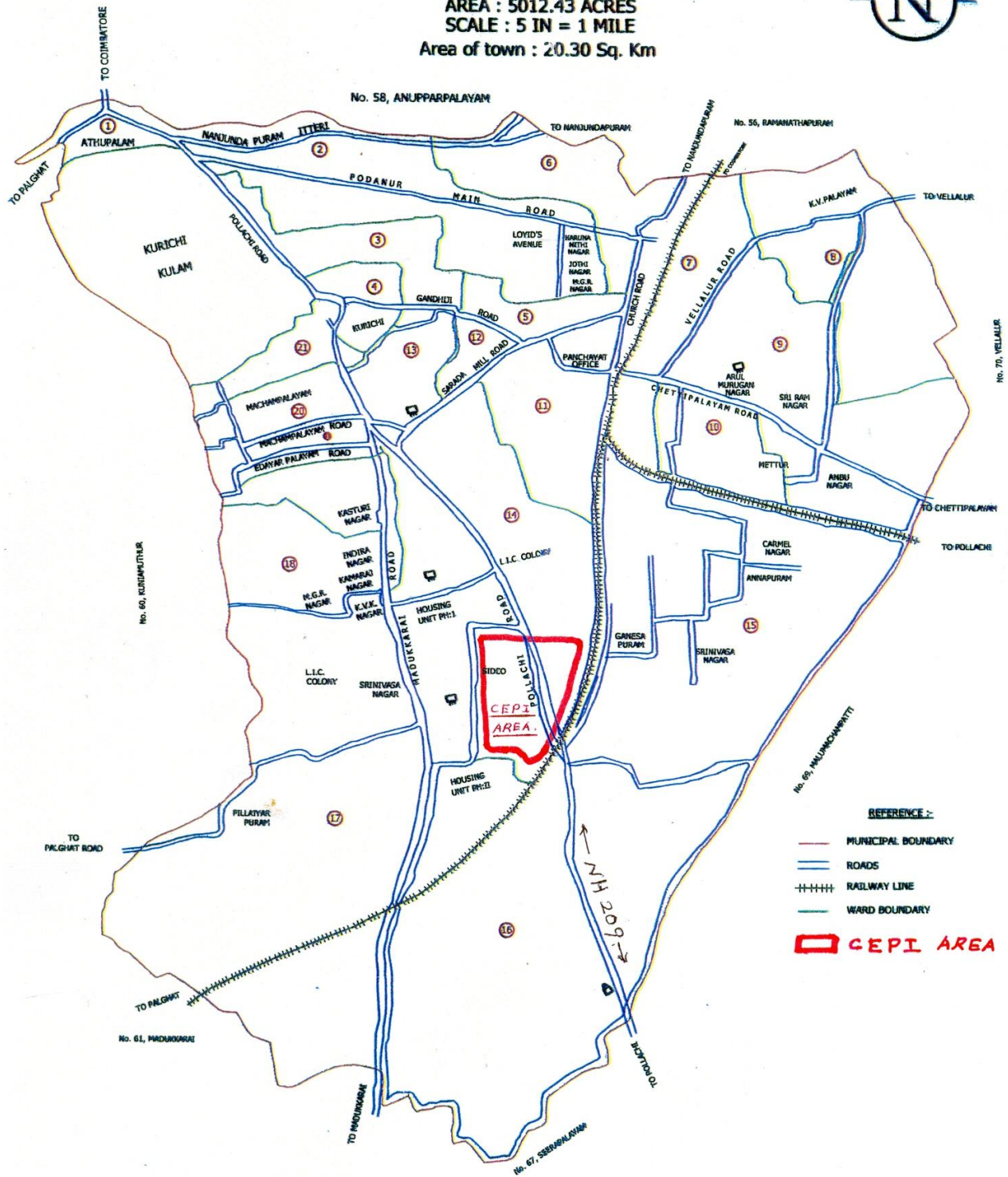
Other than above government primary schools are exists in Sundarapuram, Podanur, Kurichi, Idayarpalayam, Eachanri and Ganeshapuram. But there is no courts exist in the impact zone of 2.0 m radius.

### **DEMOGRAPHIC DETAILS IN 2 KM BUFFER ZONE:**

The industrial cluster and its 2 Km Buffer Zone is located in Kurichi Village only. The population of entire Kurichi Village is 76,794 as per 2001 Census. Kurichi Municipality drawing showing road networks is given below.

# KURICHI THIRD GRADE MUNICIPALITY COIMBATORE TK & DT.

AREA : 5012.43 ACRES  
SCALE : 5 IN = 1 MILE  
Area of town : 20.30 Sq. Km



## **1.6 Eco-geological features**

### **1.6.1 Major Water Bodies (River, Lakes, Ponds, etc)**

There is no water body exist within the CEPI area as well as impact zone of 2 km radius from the center of the cluster. The nearest river is Noyyal River located at 3.0 KM in North direction and nearest water body is Kurichi Lake located at 2.5 KM in NW direction from the Industrial Estate.

### **1.6.2 Ecological parks, sanctuaries or any eco sensitive zones**

There is no ecological park, sanctuaries or any eco sensitive zones exists within the CEPI area or 2 KM impact zone. The flora existing within the impact zone is man made plants located around industries and domestic area. The fauna presents with in the impact zone of 2 KM are very few numbers of domestic animals which are also maintained by the residents in the impact zone of 2.0 KM. There is no record for presence of any endangered plants or animals within the impact zone.

### **1.6.3 Buildings or monuments of Historical / archaeological / religious importance**

The SIDCO industrial cluster and its buffer zone of 2.0 KM radius did not accommodate any buildings or monument of historical, archaeological importance. Eachanari Vinayagar temple is located at 1.7 KM in South direction and St. Mary's church, Podanur located at a distance of about 2.0 KM in NE direction are religious important places in the impact zone around SIDCO.

## **1.7 Industry classification and distribution**

In Kurichi Industrial cluster about 286 industries are in operation exist. In this cluster most of the Industries are Engineering Industries with lathe drilling operation and few foundries are located. There is no major water consuming and trade effluent generating industry in this cluster.

### **1.7.1 Highly polluting industries (17 Categories)**

In this cluster most of the Industries are Engineering Industries and few Foundries are located. There are no highly polluting industries (17 category Industry) in this cluster as well as in impact zone of 2.0 km around the industrial cluster.

### 1.7.1 Red Category industries (54 categories)

There are about 45 no of red category industries located within the industrial cluster. Details of the different type of industries located in the cluster area are given in **Table – 1.1.**

**Table – 1.1**  
**Details of the Red Category Industries**

<b>Sl. No.</b>	<b>Category of the industry</b>	<b>No of units</b>
1	Asbestos and asbestos based industries	1
2	Ceramics / refractory	1
3	Foundries	22
4	Industry or process involving electroplating operations	1
5	Industry or process involving metal treatment or process such as pickling, paint stripping, heat treatment, phosphating or finishing and so on.	12
6	Lead re-processing and manufacturing including lead smelting	2
7	Paints and varnishes	2
8	Synthetic rubber excluding moulding	4
	<b>Total</b>	<b>45</b>

However as per the classification of TNPC Board 53 number of Red Category Industries is located in the CEPI area.

### 1.7.3 Orange and Green category industries

There are about 32 No of orange and 192 number of green category industries are exist in the SIDCO industrial cluster. They are mainly includes engineering, lathe, machining, forging, glass ball manufacturing, oil blending, paper products, pesticide formulation, plastic, powder coating, pulverizing, radiators, spinning mill and the Green Category Industries are mainly Engineering Industries with Lathe, drilling, etc.,

#### 1.7.4 Grossly Polluting industries

There is no grossly polluting Industries in the CEPI area.

#### 1.7.5 DETAILS OF ALL FOUNDRIES IN COIMBATORE DISTRICT OFFICE:

There are about 448 foundry industries located in Coimbatore District. The Geographical spread of the cluster includes Thanneerpandal, Kalapatti, Ganapathy, Singanallur, Sarkarsamakulam and Karamadai area.

The clusters and the distance from the Kurichi Industrial area are furnished as follows.

<b>Cluster name</b>	<b>Approximate Distance from Kurichi Industrial Estate in Km.</b>
Singanallur	8
Ganapathy	12
Kalapatti	13
Peelamedu	10
Karamadai	30
Sarkarsamakulam	25

The classification of foundries is depicted as follows.

<b>Investment</b>	<b>Nos</b>	<b>Type of Melting</b>	<b>Nos</b>
Large Scale	28	Pit Furnace	20
Medium Scale	49	Induction Furnace	77
Small Scale	371	Cupola Furnace	351
Total	448	Total	448

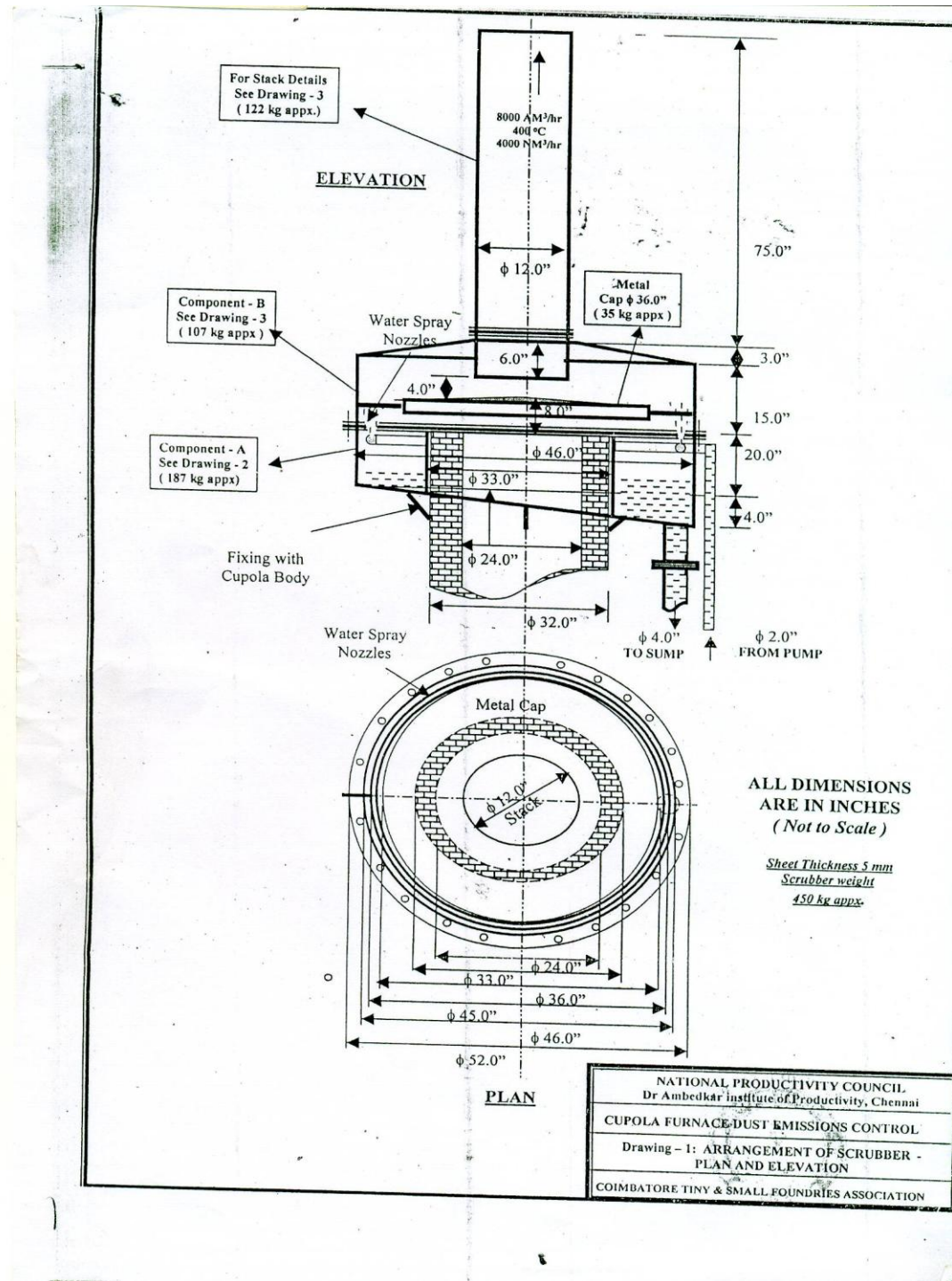
The foundries located in the above clusters are mainly cupola furnaces producing Rough Cast Iron castings. Other foundries are having Induction and pit furnaces which are manufacturing non ferrous castings like Gun metal, Aluminium and steel castings.

#### AIR POLLUTION CONTROL MEASURES:

The cupola furnaces have installed mostly NPC model Wet scrubber as Air Pollution Control measures and few cupola furnaces has provided conventional wet scrubbers to

control air pollution. The Induction and pit furnaces have installed conventional wet scrubbers to control air pollution.

The Schematic diagram of NPC Model wet Scrubber is explained in the diagram





**NPC MODEL SCRUBBER**



**CONVENTIONAL WET SCRUBBER**



Since the clusters are far away from the Kurichi Industrial Estate the air pollution of the above clusters will not have much impact. There is also no cumulative effect due to these foundries to the CEPI areas.

### **Waste Sand Disposal**

The foundries are using three type of sand moulding in their process like  $CO_2$  sand process, Green sand process and Resin sand process. Large and medium scale industries installed Thermal reclamation process for waste resin, sand, Wet/Dry type reclamation process for waste  $CO_2$  sand individually.

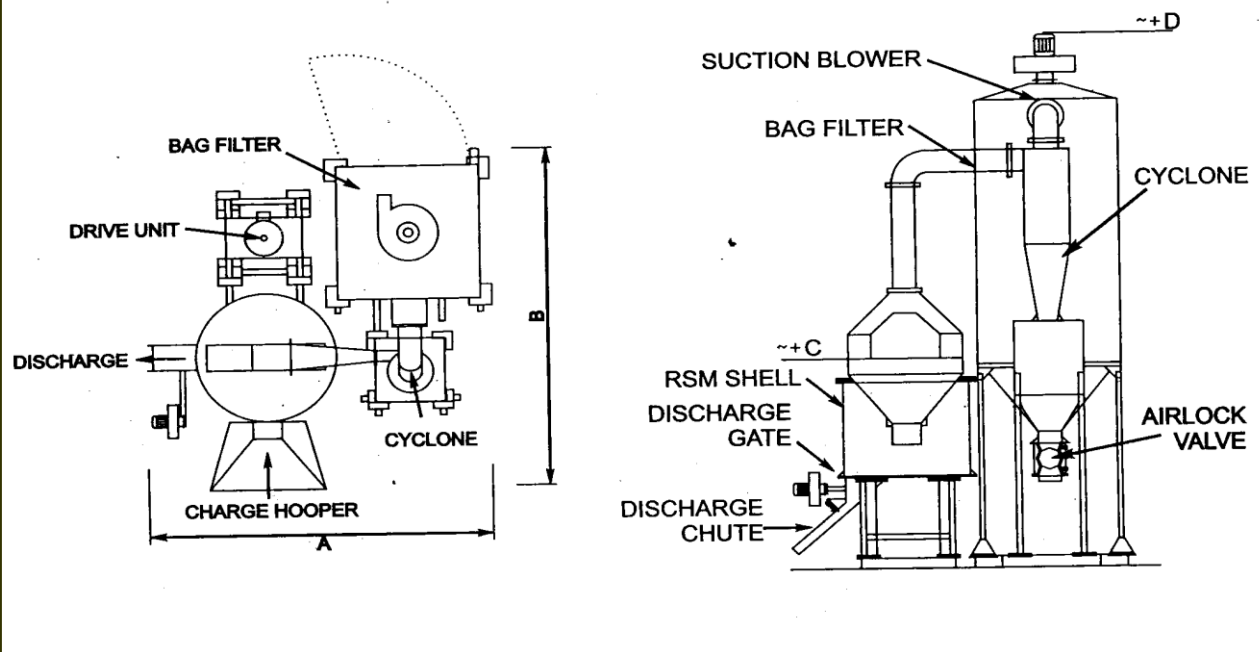
### **SAND RECLAMATION PROCESS**

<b>Type of Mould Preparation</b>	<b>Binder</b>	<b>Reclamation Method</b>
<b>Green Sand Method</b>	Bentonite (clay)	Wet reclamation ( with water ) & Dry reclamation ( solar drying)
<b>Resin Method</b>	Furfuryl alcohols	Thermal reclamation & Dry attrition
<b>CO<sub>2</sub> method</b>	Sodium Silicate	a) Wet process by soaking washing, solar drying & Sieving
		b) Dry process by dry attrition process

### **Dry sand reclamation**

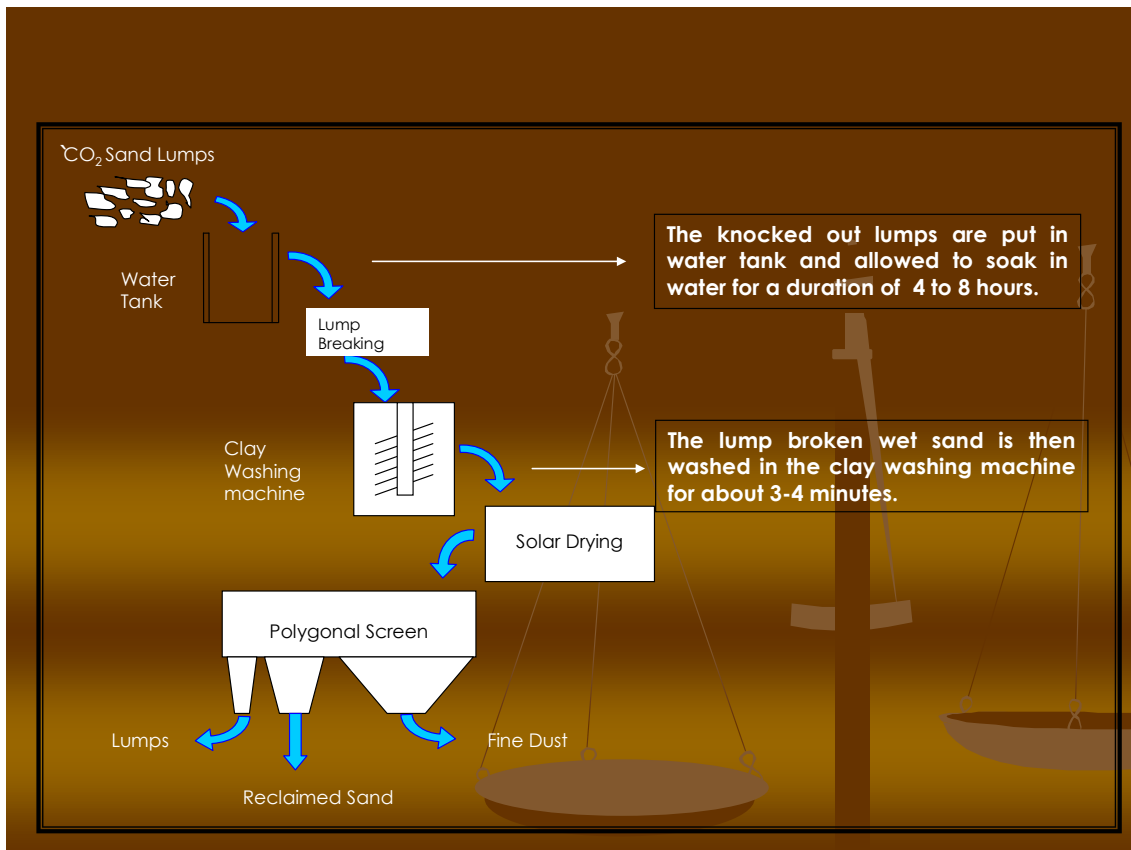
Dry sand reclamation relies on mechanical and pneumatic system to remove lumps and binders from sand. Mechanical system moves each sand grain through a sand-to-metal or sand-to-sand interface to remove impurities. These system is removing binders in waste sand .Dry reclamation can produce large quantities of dust. The dust are collected through cyclones.

## BASIC MACHINE LAYOUT



### Wet reclamation:

Wet reclamation uses water to remove sand binders. The process uses on the different water solubilities of sand and binders to separate the two. Clay bonded systems work well with water reclamation processes because the clays are very soluble in water. Sodium silicate sand binders can also be removed using wet reclamation. The sodium silicate dissolves part of the sand crystal when binding, but can be removed by exposing it to water. After the sand is soaked in a water bath it is dried and reused.



Small scale foundries adopt green sand moulding process in which waste sand is reused for mould preparation. The Small scale foundries which uses the co<sub>2</sub> sand process have proposed to provide common waste sand reclamation plant at Arasur Cluster at a cost of Rs.220 Lakhs in an area of two hectares. Total beneficiaries of this common system are hundred numbers. The proposal has been submitted to Government for availing subsidy.

### **FORMATION OF INDUSTRIAL ESTATE FOR FOUNDRIES:**

Three clusters are emerging in Coimbatore District one at Manickampalayam, Annur Taluk in an area of 45 acres having 45 Nos of industries, another at Arasur, Palladam Taluk in an area of 110 Acres having 102 Nos of industries and another at Pallapalayam by COFIA, Palladam Taluk in an area of 27 Acres having 25 Nos of industries. The foundries in the Coimbatore city are slowly moving out of the city to the above cluster due to non availability of adequate land and also due to urbanization.

## 2.0 WATER ENVIRONMENT

### 2.1 Present status of water environment

In Kurchi Industrial cluster there are no remarkable water bodies. Noyyal River is running on the upstream side of the cluster at a distance of about 3 KM. Only a water tank named Kurichi Tank is located at a distance of about 2.5 KM on the upstream side of the SIDCO Industrial Cluster. Hence water samples are collected from Borewell and Open well in the cluster area.

The samples are analyzed for the following parameters like Conductivity, pH, TSS, TDS, Oil and grease, BOD, COD, Total Residual Chlorine, Ammoniacal Nitrogen, Total Keldahl Nitrogen, Free Ammonia, Nitrate, Sulphide, Fluoride, Cyanide, Phenolic compounds, Arsenic, Boron, Manganese, Iron Total, Total Chromium, Copper, Zinc, Lead, Cadmium, Nickel, Phosphate, Mercury, SAR, Hexa valent Chromium.

#### **CONSOLIDATED STATEMENT OF ROA OF WATER SAMPLE COLLECTED FROM KURICHI INDUSTRIAL CLUSTER, COIMBATORE DISTRICT**

<b><u>OPEN WELL WATER INSIDE M/s.INDOSHELL MOULD LTD., UNIT-II</u></b>				
<b>Sl. No.</b>	<b>Parameters</b>	<b>14.12.09</b>	<b>29.06.10</b>	<b>22.07.10</b>
1	Conductivity (micromhos/cm)	3300	2680	2600
2	pH	7	7.18	7.77
3	TSS	2	28	4
4	Oil and Grease	<1	<1	<1
5	BOD	<3	<2	<2
6	COD	5	16	16
7	Total Residual Chlorine	< 0.1	<1	< 1
8	Ammoniacal Nitrogen	< 0.1	<5	<3.0
9	Total Kjeldal Nitrogen (TKN)	< 0.1	<5	<5.0
10	Free Ammonia	< 0.1	<3	<2.0
11	Nitrate Nitrogen	0.9	1.987	15.36
12	Sulphide	< 0.1	<1	<1
13	Fluoride	0.8	<1	<1
14	Cyanide	< 0.02	<0.005	<0.005

15	Phenolic Compounds	< 0.001	<0.0005	<0.0005
16	Arsenic	< 0.01	<0.001	<0.001
17	Boron	0.02	<0.001	<0.001
18	Manganese	< 0.01	<0.014	<0.001
19	Iron Total	0.21	0.023	0.582
20	Total Chromium	< 0.01	<0.01	<0.01
21	Copper	< 0.01	0.724	<0.0015
22	Zinc	0.12	0.242	<0.0015
23	Lead	< 0.01	<0.015	<0.015
24	Cadmium	< 0.01	<0.0008	<0.0008
25	Nickel	< 0.01	<0.006	<0.006
26	Phosphate (dissolved)	< 0.1	0.039	<0.005
27	Mercury	< 0.001	<0.003	<0.003
28	SAR	0.2	4.34	1.21
29	Hexavalent Chromium	< 0.05	<0.01	<0.01

**CONSOLIDATED STATEMENT OF CRITICALLY POLLUTED AREA,**  
**KURICHI INDUSTRIAL CLUSTER**

<b><u>BORE WELL WATER INSIDE M/s.SURIYA INDUSTRIES,</u></b>				
<b><u>62. SIDCO Estate, Kurichi</u></b>				
<b>Sl. No.</b>	<b>Parameters</b>	<b>14.12.09</b>	<b>29.06.10</b>	<b>22.07.10</b>
1	Conductivity (micromhos/cm)	4117	2710	2720
2	pH	7.2	6.94	7.69
3	TSS	2	22	4
4	Oil and Grease	< 1	<1	<1
5	BOD	< 3	6	<2
6	COD	15	16	16
7	Total Residual Chlorin	< 0.1	<1	<1
8	Ammoniacal Nitrogen	< 0.1	<5	<3.0
9	Total Kjeldal Nitrogen	< 0.1	<5	6.2
10	Free Ammonia	< 0.1	<3	<2.0
11	Nitrate Nitrogen	0.4	26.96	53.52
12	Sulphide	< 0.1	<1	<1
13	Fluoride	0.7	<1	<1

14	Cyanide	< 0.02	<0.005	<0.005
15	Phenolic Compounds	< 0.001	<0.0005	<0.0005
16	Arsenic	< 0.01	<0.001	<0.001
17	Boron	< 0.01	<0.001	<0.001
18	Manganese	< 0.01	<0.025	0.062
19	Iron Total	0.32	0.337	0.733
20	Total Chromium	< 0.01	<0.01	<0.01
21	Copper	< 0.01	0.672	0.408
22	Zinc	0.09	0.269	0.25
23	Lead	< 0.01	<0.015	0.068
24	Cadmium	< 0.01	<0.0008	0.051
25	Nickel	< 0.01	<0.019	0.064
26	Phosphate (dissolved)	< 0.1	0.011	<0.005
27	Mercury	< 0.001	<0.003	<0.003
28	SAR	0.49	2.67	0.471
29	Hexavalent Chromium	< 0.05	<0.01	<0.01

The results shows only Conductivity is in excess of standards. This may be due to geophysical statistics of underground surface. There is no major effluent generating industries in this cluster.

### **2.1.1 Water bodies effluent receiving drains in the area important for water quality monitoring**

Water bodies such as Noyyal river and Kurichi tank are located on the upstream side of the SIDCO Industrial Cluster. There is no discharge of effluent in this industrial cluster and there is no possibility of effluent reaching the water bodies. Hence it is inevitable to monitor the water quality through collecting ground water samples in Open / Borewell. One open well and Bore well located in M/s. Indoshell Mould Limited, Unit-II and M/s. Surya Industries respectively are selected for monitoring purpose.

### **2.1.2 Present levels of Pollutant in water bodies effluent receiving drains/ground water (Routine parameter, special parameters and water toxic relevant to the area in three categories known carcinogens, probable carcinogens and other toxics)**

The ground water samples collected in the Bore & Open well is tabulated as follows. TDS is exceeding the standards. All other parameters are within the limits for drinking purpose. There are no carcinogens and other toxics present in the water.

### **2.1.3 Predominant Sources contributing to various pollutants**

In the SIDCO Industrial cluster there is no water polluting industry or major effluent generating unit. Most of the units are foundry, engineering industries which generate very meager quantity of effluent from scrubber bleed off which is not discharged into ground but solar evaporated. Only few surface coating units are existing which make the effluent from its process. Main source of water pollution is arising from domestic usage by employees.

## **2.2 Sources of Water Pollution**

### **2.2.1 Industrial**

In the industrial cluster large numbers of industries are engineering and foundry sectors. There is no trade effluent generation except from scrubber which is solar evaporated. Few surface coating units are functioning in the cluster namely

1. Janatics India Private Limited
2. VXL Ring Travelers Private Limited
3. Metallurgical Engineering Industries
4. Venus Finishers
5. Vijayeswari Ring Travelers Private Limited
6. Vijay Electroplating Works
7. Alumex
8. Ramson Color Coaters
9. Vignesh Metal Process



These nine units are functioning with very less quantity of effluent. Two industries have provided RO Plant so as to achieve zero discharge.

### **2.2.2 Domestic**

In the industrial cluster, industries are most probably man power oriented. Approximately 10,000 employees are working. The domestic sewage is the major concern in the water pollution. About 5 lakh liters of sewage are being generated which is presently treated in septic tank which is not adequate.

### **2.2.3 Others (Agricultural run off, leachate from MSW dump, illegal dumpsite etc.)**

There is no agricultural activity in the above industrial cluster. Hence agricultural run off is ruled out. The municipal solid waste is collected by Kurchi municipality in the above cluster and disposed through composting. There is no illegal solid waste disposal in the cluster area.

### **2.2.4 Impact on surrounding area (Outside the CEPI Area) on the water sources/drainage system of the area under consideration**

In the cluster there are only nine surface coating units generate trade effluent. This is treated in effluent treatment plant and disposed through gardening/Solar evaporation pan. The solid waste sand is reclaimed to maximum extent and re used. There is no dumping of waste sand in the water bodies. The industrial cluster is surrounded by residents. The drainage from this habitation may also affect the quality of ground water.

## **2.3 Details of water polluting Industries in Area/Cluster**

Only few surface coating units which generate trade effluent from phosphating are only water polluting industries in the cluster. The details of the units are furnished as follows.

Sl. No	Name & Address	Production Qty	Effluent generation
1	Janatics India Private Limited, E-25 , SIDCO Industrial Estate , Kurichi , Cbe.	1,Pneumatic cylinder – 25000Nos/M 2,Pneumatic Valves – 50000 Nos/M 3,Solenoid Valves – 30000Nos/M 4,Pneumatic systems – 1000Nos/M 5,Pneumatic Oil Pump – 1250Nos/M 6,Pneumatic fittings – 400000Nos/M FRL Filters – 50000 Nos/M	2.2 KL/Week
2	VXL Ring Travelers Private Limited , 22,SIDCO Industrial Estate , Kurichi ,Cbe.	1, Ring Travelers – 2400Kgs/M 2,Rings – 3000Kgs/M	2.55 KLD
3	Metallurgical Engineering Industries , C-3 Private industrial Estate Kurichi, Cbe.	Hardened Ferrous Components – 60T/M	0.100 KLD
4	Venus Finishers , Site no 7B,Private Industrial Estate ,Kurichi ,Cbe .	Blackening of M.S Components – 250Kgs/day	0.05 KLD
5	Vijayeswari Ring Travelers Private Limited , A-5,Private Industrial Estate, Kurichi ,Cbe.	Ring Travelers -0.4T/M	0.200KLD
6	Vijay Electroplating Works , E- 79B,Sidco Industrial Estate, Cbe.	Zinc & Nickel Plating – 300M <sup>2</sup> /M	0.125 KLD
7	Alumex ,64,SIDCO Industrial Estate Kurichi ,Cbe.	1. Aluminium Anodizing – 100M <sup>2</sup> /M 2. Aluminium Chromating – 75M <sup>2</sup> /M	0.66KLD

8	Ramson Color Coaters , E-37,SIDCO Industrial Estate Kurichi , Cbe.	Powder coated ferrous components 3000sqm/M	0.750KL/15days
9	Vignesh Metal Process 74,SIDCO Industrial Estate ,Kurichi ,Cbe	Finished web castings – 30T/M Finished S.S castings – 20T/M Heat Treatment components – 30T/M	1 KL/Month

#### 2.4 Effluent disposal methods - Recipient water bodies etc.

The foundries which generate effluent from scrubber are disposed through solar evaporation pan. In the nine surface finishing two units have installed RO Plant to achieve zero discharge and remaining units are treating the treated effluent and dispose the same without affecting the environment.

The details of disposal method is furnished as follows

SL. No	Name & Address	Final disposal of effluent
1	Janatics India Private Limited , E-25 , SIDCO Industrial Estate , Kurichi , Cbe.	Zero discharge
2	VXL Ring Travelers Private Limited , 22,SIDCO Industrial Estate , Kurichi ,Cbe.	Zero discharge
3	Metallurgical Engineering Industries , C-3 Private industrial Estate Kurichi, Cbe.	Solar Evaporation Pan
4	Venus Finishers , Site no 7B,Private Industrial Estate ,Kurichi ,Cbe .	Solar evaporation pan .
5	Vijayeswari Ring Travelers Private Limited , A-5,Private Industrial Estate, Kurichi ,Cbe.	Solar evaporation pan .
6	Vijay Electroplating Works , E- 79B,Sidco Industrial Estate ,Cbe.	Solar evaporation pan
7	Alumex ,64,SIDCO Industrial Estate Kurichi ,Cbe.	Solar evaporation pan
8	Ramson Color Coaters , E-37,SIDCO Industrial Estate Kurichi , Cbe.	Treated effluent is utilized for gardening.

9	Vignesh Metal Process 74,SIDCO Industrial Estate ,Kurichi ,Cbe	Solar Evaporation Pan
---	--	-----------------------

There are no water bodies located on the down stream side of the cluster which receive the waste water from the cluster. Moreover there are no major waste generating units in the cluster

## 2.5 Quantification of waste water pollution load and relative contribution by difference sources viz industrial/domestic

There are no Major effluent generating industries is located in this industrial cluster. The domestic sewage generated from employees contributes to the organic load 500-KLD of sewage is generated

$$\begin{aligned} \text{Organic load} &= \frac{500\text{KLD} \times 250 \text{ mg/l} \times 1000}{1000 \times 1000} \\ &= 125 \text{ kg of BOD} \end{aligned}$$

## 2.6 Action Plan for Compliance and Control of pollution

### 2.6.1 Existing infra structure/facilities – water quality monitoring network, ETPs, CETPs, Sewage treatment plant of industry (STPs), surface drainage system, effluent conveyance channels/outfalls etc.

There are no water bodies located in the cluster and also within impact zone of industrial cluster. Only a water tank named Kurichi tank is located on the upstream side of cluster at a distance of about 3 KM. Two ground water sample locations and surface water sample location on at kurchi tank and Noyyal river are identified and samples are collected once in three months. Samples are analyzed in the District Environmental lab and Advanced environmental laboratory, TNPCB. There is no CETP and STP in the cluster.

## 2.6.2 Pollution control measures installed by industries

There are nine surface coating industries generating trade effluent of 1 to 2 KLD  
Two medium scale units have provided RO Plant to achieve zero discharge. The details of the treatment system installed by industries is tabulated as follows

S. No	Name & address of units	Quantity of effluent	Details of treatment system	Disposal
1	Janatics India Private Limited , E-25 , SIDCO Industrial Estate , Kurichi , Cbe.	2.2 KL/Week	1, Collection Tank – 1 No 2,Settling Tank – 1 No 3, Intermediate storage tank – 1No 4,Dual Media Filter – 1No 5,Activated carbon filter – 1No 6,Micron Filter – 1No 7,RO Plant – 1No 8,RO Permeate storage tank -1No 9,Sludge drying bed – 1No 10,Solar evaporation pan – 1No 11,RO reject tank – 1No	Zero discharge
2	VXL Ring Travelers Private Limited , 22,SIDCO Industrial Estate , Kurichi ,Cbe.	2.55 KLD	1,Collection tank – 1 No 2,Settling tank – 1No 3,Neutralization tank cum settling	Zero discharge

			<p>tank – 1No  4,Sand filter – 1No  5,Sludge drying bed – 1 No  6,RO Plant – 100Lits/Hr Cap  7,RO Reject tank – 1No  8,Treated collection sump</p>	
3	Metallurgical Engineering Industries , C-3 Private industrial Estate Kurichi, Cbe.	0.1 KLD	Solar Evaporation pan – 1Nos	Solar Evaporation Pan
4	Venus Finishers , Site no 7B,Private Industrial Estate ,Kurichi ,Cbe .	0.05 KLD	<p>1,Collection cum Neutralization tank – 1No  2,Solar evaporation pan – 1No</p>	Solar evaporation pan .
5	Vijayeswari Ring Travelers Private Limited , A-5,Private Industrial Estate, Kurichi ,Cbe.	0.2 KLD	<p>1,Reaction cum settling tanks – 2Nos  2, Solar evaporation pan – 1 No</p>	Solar evaporation pan .
6	Vijay Electroplating Works , E- 79B,Sidco Industrial Estate ,Cbe.	0.125 KLD	<p>1,Collection cum Neutralization tank – 2Nos  2,Mixing cum Settling tank – 1No  3, Sand filter – 1No  4, Sludge drying bed – 2Nos</p>	Solar evaporation pan

			5,Solar Evaporation Pan – 2Nos	
7	Alumex ,64,SIDCO Industrial Estate Kurichi ,Cbe.	0.66 KLD	1, Collection Tank cum Reduction Tank – 1No 2,Collection tank cumj neutralization tank -1No 3,Settling tank – 1No 4,sand Filter – 2No 5,Sludge drying bed – 2Nos 6,solar Evaporation Pan – 1No	Solar evaporation pan
8	Ramson Color Coaters , E-37,SIDCO Industrial Estate Kurichi , Cbe.	0.75 KL/15 days	1,Collection Tank – 1No 2,Reaction cum settling tank – 1Nos 3,Dosing tank – 2nos 4,Sand filter – 1No Sludge drying bed – 1No	Treated effluent is utilized for gardening.
9	Vignesh Metal Process 74,SIDCO Industrial Estate ,Kurichi ,Cbe	1 KL/Month	1,Collection Cum Neutralisation Tank – 1No 2,Solar Evaporation Pan – 1No	Solar Evaporation Pan

### **2.6.3 Technological Intervention**

#### **2.6.3.1 Inventorisation of prominent Industries with technological gaps**

In the Industrial cluster seven micro scale surface coating units are functioning. Two medium scale units have already installed RO plant to achieve zero discharge. There are no technological gaps.

#### **2.6.3.2 Identification of low cost and advanced clean technology for pollution control**

Surface coating units are the effluent generating industries in this estate with very meager quantity of effluent. This is treated in collection cum reaction tank & settling tanks at the low cost and disposed through solar evaporation pan.

### **2.6.4 Infrastructure renewal**

#### **2.6.4.1 Details of existing infrastructural facilities**

In the Industrial cluster bitumen roads are existing for transport. All industries are connected with water supply line from SIDCO. No common sewage collection & treatment facility is available. There is no proper lined drainage to collect rain water for final disposal

#### **2.6.4.2 Need for up gradation of existing facility**

Proper drainage facility should be provided to carry the run off. For final disposal entire stretch of storm water drainage shall be connected. Likewise no common treatment facility is available for sewage in this entire estate. At present sewage from industries are treated in septic tank and disposed through dispersion trench/soak pit which is inadequate. Hence, a common sewage treatment plant should be planned for collection, treatment & disposal of sewage. The treated sewage can be utilized for green belt development within the industrial cluster.

#### **MEASURES FOR SEWAGE AND MUNICIPAL SOLID WASTE:**

In this Industrial Cluster it is roughly estimated that all industries will generate 300 to 350 KL of Sewage per day and proposed to provide a STP with 500 KLD Capacity. Tamilnadu Small Industries Development Corporation has proposed to allot land for



the construction of STP. Coimbatore SIDCO Industrial Manufacturer's Association has proposed to construct the STP with Conventional Treatment system at a cost of Rs.146 Lakhs. The Association is approaching the State and Central Government through Industries Department for subsidy under Micro Small Entrepreneur combined Development – Industrial Infrastructure Development Scheme. The entire project for installation and commissioning of STP will take one year time.

#### **2.6.4.3 De-Silting of waste tanks, drains, rivers etc.,**

In the industrial cluster at kurchi there is no water bodies located nearby. There are no major effluent generation units except few surface coating units. The kurchi tank and Noyyal river are at the upstream side of the cluster. Hence there is no need for any desilting of water bodies.

#### **2.6.4.4 Construction of lined drains/connections**

Entire cluster is lack of lined drains. Only earthen drains exist. Hence no proper collection of run off is in practice. So proper lined storm water drain shall be made in entire cluster.

#### **2.6.4.6 Rejuvenation/Management plan for important eco-geological features**

There is no remarkable ecologically sensitive area near to the industrial cluster. Hence the management of the features does not arise.

#### **2.6.4.7 Carrying of effluent from industrial units located is non industrial location to CETP facilities by lined drains/pipelines only and prevention of their disposal in to city sewerage/surface water drains.**

There are no major waste water generating industries located within the cluster as well as around 2 KM radius of the industrial cluster.

#### **2.6.4.8 Installation of Gen set at CETPs**

There is no CETP in this cluster. Only common STP is proposed and separate proposal enables for installation of Gen set at the above site.

## 2.6.5 Managerial and Financial aspects

### 2.6.5.1 Cost and Time estimation

Two medium scale Industries have provided R.O.Plant and one large scale Industry located away from the cluster has proposed to provide STP.

SL. No.	Source	Industry	Target date	Cost	Remarks
1	Trade Effluent-RO System	M/s. VXL Ring Travellers (P) Limited	30.07.2010	10	R.O. Completed & it is in operation.
2	Trade Effluent-RO Plant	M/s. Janatics India Pvt.Limited	30.07.2010	5	RO Plant provided and it is in operation.
3	Sewage – STP	M/s. Titan Paints & Chemicals	30.09.2010	8	Order Placed. STP will be completed before 30.09.2010
4	Sewage from Industries - Common STP	SIDCO & COSIEMA (Association)	30.09.2011	146	The Association is expecting 90% subsidy from the Government through SIDCO.

### 2.6.5.2 Identified Private / Public sector potential investors & their Contribution/Obligation

It is decided to install common sewage treatment plant to collect & treat & dispose the sewage generated from all industries located in SIDCO & Private industrial sectors. The capacity of the plant is 500 KLD. The project is to be implemented by industries association, & SIDCO.

### 2.6.5.3 Government Budgetary support requirements

Total Project cost for common STP is about Rs.146 Lakhs exclusive of conveyance system. The Industrial Association is expecting 90% subsidy from Government and

the member contribution is 10 % of their project cost. SIDCO has to prepare the project report for this scheme.

#### **2.6.5.4 Hierarchical and structured managerial system for efficient implementation**

Only common STP is to be provided for all the Industries in the cluster.

#### **2.6.6 Self monitory system in industries (ETPs)**

In surface coating units the RO plant with zero discharge have been provided along with flow meters and energy meters for the self monitoring. The remaining micro industries are discharging their effluents through Solar Evaporation Pan.

#### **2.6.7 Data linkages to SPCB / CPCB (of monitoring devices)**

There is no major effluent generating industries in this estate. Hence, there is no necessity of data linkage.

### 3.0 AIR ENVIRONMENT

#### 3.1 Present status of Air Environment

National Ambient Air Quality Monitoring station is already functioning in this SIDCO Industrial Estate. The exact location of the station is “Top of the SIDCO Industrial Estate Office”. The present air quality levels of the SIDCO industrial cluster from the year 2004 to July 2010 is furnished in **Table – 3.1 to 3.3** and shown **Figure – 3.2 to 3.5**.

##### 3.1.1 Critical locations for air quality monitoring

The total area of the Kurichi Industrial cluster is about 180 acres only. National Ambient Air Quality Monitoring station is already functioning in the Top of the SIDCO Industrial Estate Office, which is located in the centre of the cluster. The location was already decided based on wind pattern, geographical locations of industries and functioning for the past six years. The map showing the location of the NAAQM station is given in **Figure -1.3**. This location may be considered as a critical location for this industrial cluster.

##### 3.1.2 Present levels of pollutants in air

The NAAQM is covering only routine parameters like Total Suspended Particulate Matter (TSPM), Respirable Suspended Particulate Matter (RSPM), Sulphur Dioxide and Oxides of Nitrogen (NOx). The summary of the NAAQM results for the year 2004 to 2009 is given in the **Table – 3.1**. The summary of the results for the year 2008-09 and 2009-10 are given in **Table – 3.2** and **3.3** respectively. The trend graphs for individual parameters for the year 2009-10 are shown in **Figure - 3.2 to 3.5**. To know the current status of the air pollution in the industrial cluster two AAQ monitoring was conducted covering entire list of parameters mentioned in the NAAQS prescribed by the CPCB/ dated 18.11.2009. The result of the monitoring conducted during July 2010 is given in **Table - 3.4**.

**TABLE – 3.1**  
**SUMMARY OF NAAQM RESULTS (2004 – 2009)**



**STATUS OF AIR QUALITY IN TAMILNADU UNDER NATIONAL AIR QUALITY MONITORING PROGRAMME (NAMP) 2004-09**

PERMISSIBLE LIMIT (24hrs)

SO<sub>2</sub> : 80 microgram/m<sup>3</sup>

NO<sub>x</sub> : 80 microgram/m<sup>3</sup>

SPM : 360 microgram/m<sup>3</sup>

RSPM : 120 microgram/m<sup>3</sup>

**Ambient Quality Trend**

NAMP Station : Kurichi (SIDCO)

Station Code : 237

Category : Industrial

Month & Year	No. of Monitoring days	SO <sub>2</sub> µgm/m <sup>3</sup>				NO <sub>x</sub> µgm/m <sup>3</sup>				TSPM µgm/m <sup>3</sup>				RSPM µgm/m <sup>3</sup>			
		Max	Min	Avg.	Pollution Category	Max	Min	Avg.	Pollution Category	Max	Min	Avg.	Pollution Category	Max	Min	Avg.	Pollution Category
2004-2005	38	28.7	<4.0	9.3	L	90.0	10.8	48.1	M	551.6	41.6	192.0	M	158.9	28.3	84.0	M
2005-2006	100	25.0	<4.0	10.2	L	69.3	30.8	47.3	M	381.6	44.7	161.4	L	160.2	25.3	73.0	M
2006-2007	95	25.8	<4.0	11.4	L	62.5	16.7	40.1	L	866.0	80.4	230.0	M	233.3	45.0	102.0	M
2007-2008	94	16.8	<4.0	5.9	L	54.7	11.7	31.0	L	417.0	52.0	212.0	M	261.0	32.0	110.0	M
2008-2009	95	13.5	<4.0	5.8	L	83.9	17.6	37.3	L	511.0	94.0	224.0	M	349.0	58.0	117.0	M

Note:-SO<sub>2</sub> : Sulphur di oxide, NO<sub>x</sub> : Oxides of nitrogen, RDP : Respirable dust particulate matter (<10micron size), TSPM : Total Suspended particulate matter, PC : Pollution category (L-Low, M-Medium, H-High, C-Critical)

Deputy Manager (Lab)SG  
District Environmental Laboratory,  
Coimbatore.

18/3/2010

**TABLE – 3.2**  
**SUMMARY OF NAAQM RESULTS (APRIL 2008 – MARCH 2009)**



**STATUS OF AIR QUALITY IN TAMILNADU UNDER NATIONAL AIR QUALITY MONITORING PROGRAMME (NAMP)- 2008-09**

PERMISSIBLE LIMIT (24hrs)  
SO<sub>2</sub> : 120 microgram/m<sup>3</sup>  
NO<sub>x</sub> : 120 microgram/m<sup>3</sup>  
SPM : 500 microgram/m<sup>3</sup>  
RSPM : 150 microgram/m<sup>3</sup>

**Ambient Quality Trend**

NAMP Station : SIDCO

Station Code : 237

Category : Industrial

Month & Year	No. of Monitoring days	SO <sub>2</sub> µgm/m <sup>3</sup>				NO <sub>x</sub> µgm/m <sup>3</sup>				TSPM µgm/m <sup>3</sup>				RSPM µgm/m <sup>3</sup>			
		Max	Min	Avg.	Pollution Category	Max	Min	Avg.	Pollution Category	Max	Min	Avg.	Pollution Category	Max	Min	Avg.	Pollution Category
April 2008	8	7.2	<4.0	4.9	L	31.7	17.6	25.3	L	346.0	146.0	203.0	L	177.0	83.0	121.0	M
May 2008	9	6.6	<4.0	5.4	L	33.8	22.4	27.2	L	319.0	161.0	212.0	L	190.0	72.0	119.0	M
June 2008	8	7.0	<4.0	5.4	L	31.1	19.0	26.4	L	301.0	94.0	153.0	L	134.0	58.0	85.0	M
July 2008	9	6.1	<4.0	5.0	L	54.4	19.2	29.9	L	244.0	121.0	174.0	L	136.0	74.0	97.0	M
August 2008	8	9.5	<4.0	5.5	L	83.9	25.4	46.2	L	246.0	133.0	197.0	L	133.0	77.0	99.0	M
September 08	8	9.2	<4.0	5.6	L	49.5	32.3	42.7	L	266.3	104.9	194.8	L	132.3	63.6	98.5	M
October 08	8	8.8	4.7	6.7	L	55.9	28.4	41.8	L	254.1	132.7	172.6	L	141.3	66.6	99.6	M
November 08	8	9.8	<4.0	5.6	L	54.8	26.1	34.9	L	337.3	144.6	249.0	L	183.0	84.0	132.0	M
December 08	7	13.5	5.5	6.9	L	57.4	21.8	40.5	L	383	113.0	280.7	M	163.4	91	130	M
January 2009	7	8.3	5.8	6.9	L	73.1	26.9	49.4	L	511.0	199.0	332.0	M	349.0	78.0	193.0	H
February 2009	8	8.9	5.3	6.6	L	49.6	28.6	36.2	L	427.0	154.0	258.0	M	167.0	92.0	113.0	M
March 2009	7	11.9	<4.0	4.5	L	65.3	34.4	47.0	L	371.0	185.0	256.0	M	169.0	78.0	118.0	M
Total	--	--	--	5.8	L	--	--	37.3	L	--	--	224.0	M	--	--	117.0	M

Note:-SO<sub>2</sub> : Sulphur di oxide, NO<sub>x</sub> : Oxides of nitrogen, RDP : Respirable dust particulate matter (<10micron size), TSPM : Total Suspended particulate matter, PC : Pollution category (L-Low, M-Medium, H-High, C-Critical)

2 - 1875/10  
Deputy Manager (Lab)SG  
District Environmental Laboratory,  
Coimbatore.

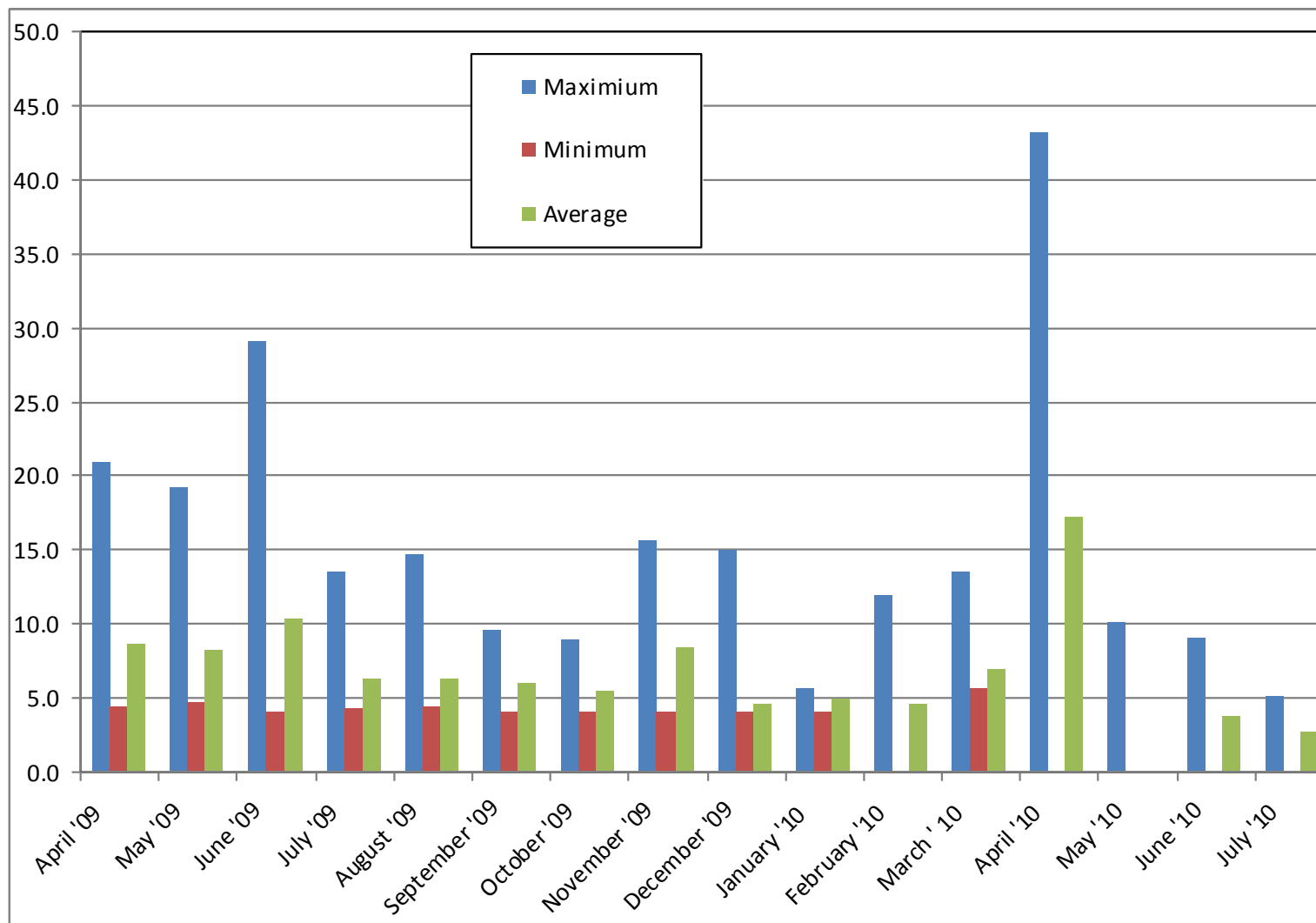
**TABLE – 3.3**  
**SUMMARY OF NAAQM RESULTS (APRIL 2009 – JULY 2010)**

Parameter / Month	So <sub>2</sub>			Nox			RSPM			SPM		
	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average
April '09	20.8	4.3	8.6	42.3	14.6	27.8	146.0	69.0	98.8	279.0	168.0	217.6
May '09	19.1	4.6	8.2	26.4	12.1	17.1	105.0	77.0	92.9	233.0	157.0	190.3
June '09	29.0	<4.0	10.2	36.8	13.6	21.3	316.0	62.6	116.3	489.0	98.0	232.2
July '09	13.5	4.2	6.2	62.7	13.9	30.0	112.3	77.3	101.9	227.0	126.0	167.2
August '09	14.7	4.3	6.2	31.8	19.9	26.4	98.0	51.0	71.2	235.0	109.0	166.4
September '09	9.5	<4.0	6.0	33.5	17.4	26.7	538.0	70.0	250.8	955.0	149.7	378.5
October '09	8.9	<4.0	5.5	46.3	13.6	25.0	143.0	58.0	101.8	370.0	137.0	244.8
November '09	15.6	<4.0	8.4	39.4	15.0	27.4	103.0	66.5	94.1	435.0	150.0	230.0
December '09	14.9	<4.0	4.6	41.8	17.9	21.1	129.0	59.7	81.5	358.0	156.0	135.4
January '10	5.6	<4.0	4.9	48.7	28.7	31.6	150.0	67.7	111.9	303.5	166.7	228.4
February '10	11.9	<4.0	4.5	65.3	34.4	47.2	169.0	78.0	118.0	371.0	185.0	256.0

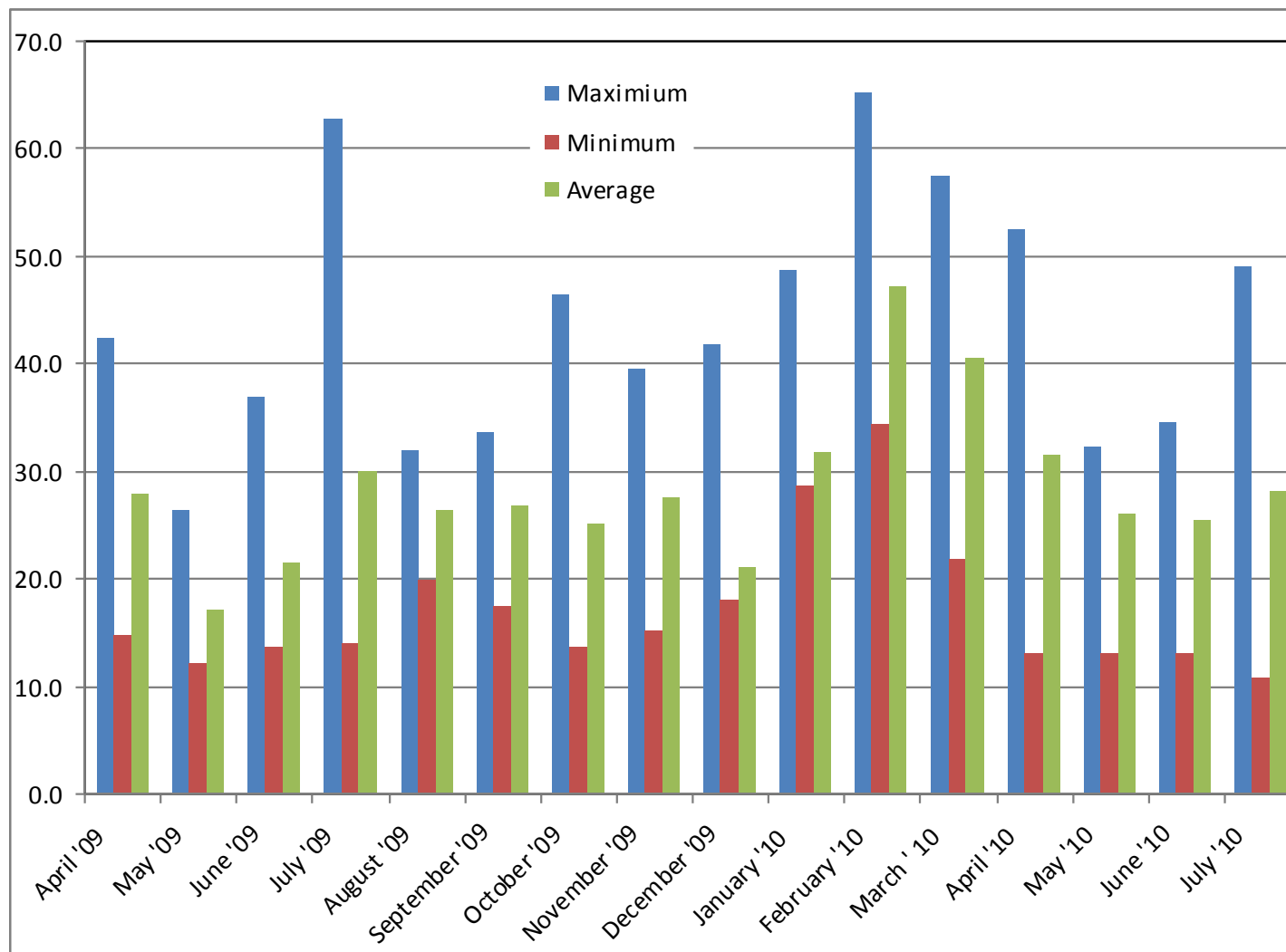
<b>March '10</b>	13.5	5.5	6.9	57.4	21.8	40.5	163.4	91.0	130.0	383.0	113.0	280.7
<b>April '10</b>	43.2	<4.0	17.2	52.5	12.9	31.4	125.0	54.0	102.0	440.0	64.0	311.0
<b>May '10</b>	10.0	<4.0	<4.0	32.3	12.9	26.0	1184.0	40.0	280.0	1403.0	61.0	439.0
<b>June '10</b>	9.0	<4.0	3.7	34.5	12.9	25.3	290.0	38.0	141.0	414.0	59.0	256.0
<b>July '10</b>	5.0	<4.0	2.7	49.0	10.7	28.0	260.0	43.0	117.5	318.0	59.0	195.0



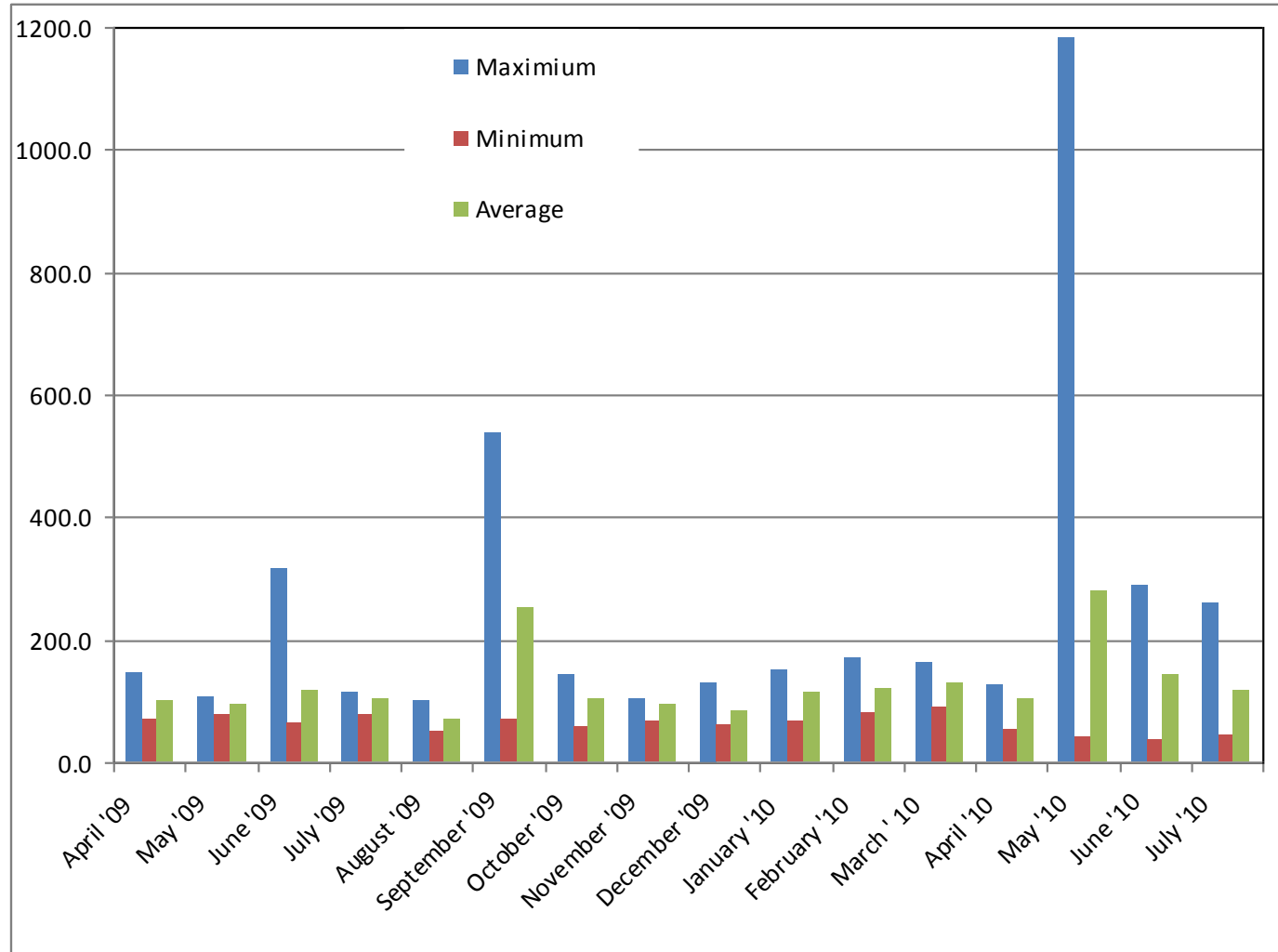
**FIGURE – 3.2**  
**TREND OF SO<sub>2</sub> OBSERVED AT SIDCO, KURICHI (APRIL 2009 TO JULY 2010)**



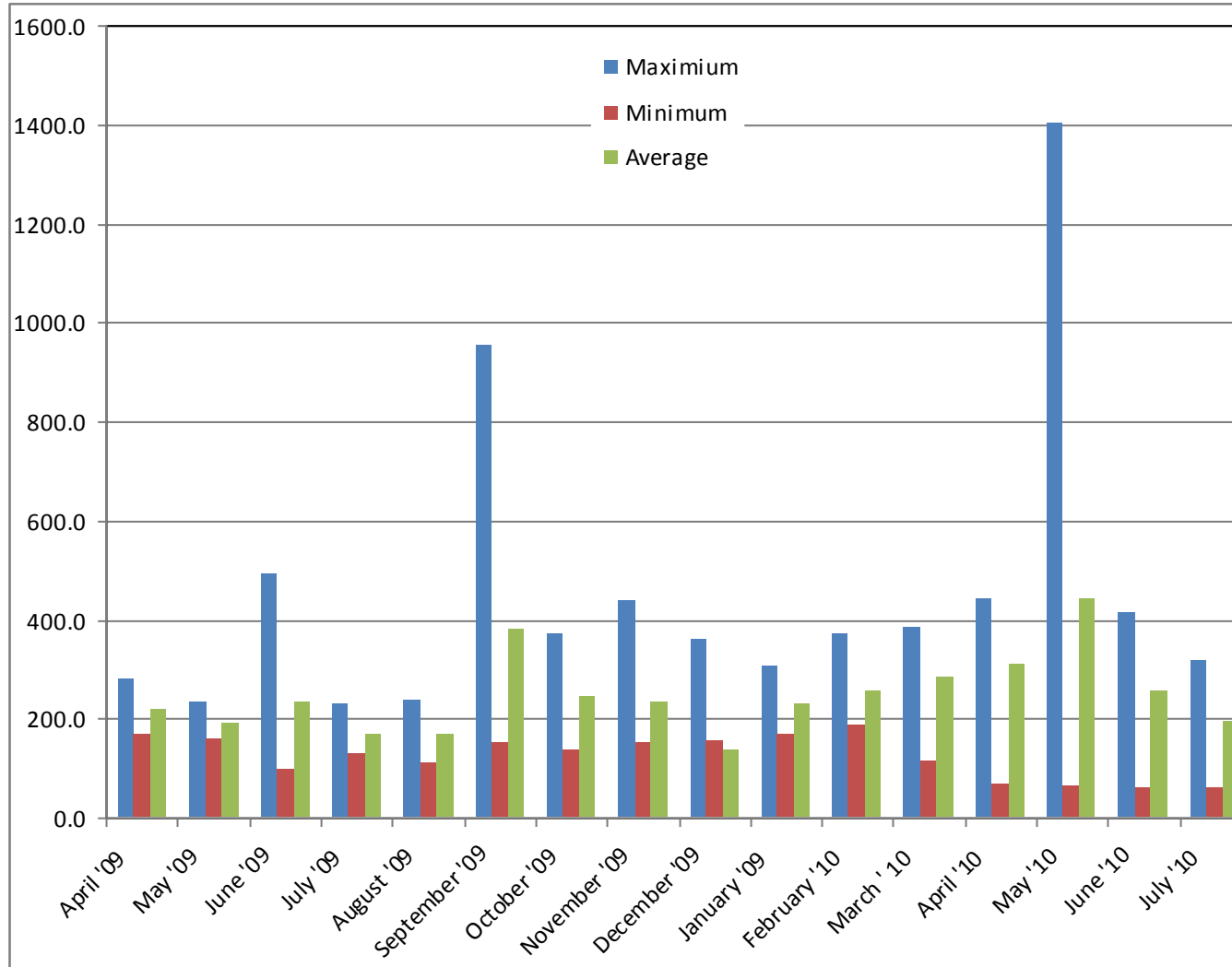
**FIGURE – 3.3**  
**TREND OF NO<sub>x</sub> OBSERVED AT SIDCO, KURICHI (APRIL 2009 TO JULY 2010)**



**FIGURE – 3.4**  
**TREND OF RSPM OBSERVED AT SIDCO, KURICHI (APRIL 2009 TO JULY 2010)**



**FIGURE – 3.5**  
**TREND OF SPM OBSERVED AT SIDCO, KURICHI (APRIL 2009 TO JULY 2010)**



**TABLE – 3.4**  
**MONITORING RESULTS FOR THE LATEST PARAMETERS**  
**DATE OF SURVEY – 23.07.2010 & 24.07.2010**

S. No.	Parameter	Results		Standard*
		SW corner of the SIDCO	Top of SIDCO Office	
1	Sulphur Dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	10.0	14.2	80
2	Nitrogen Dioxide (NO <sub>2</sub> ), µg/m <sup>3</sup>	15.9	23.6	80
3	Particulate Matter (Size Less than 10 µm) or PM <sub>10</sub> , µg/m <sup>3</sup>	121.8	185.4	100
4	Particulate Matter (Size Less than 2.5 µm) or PM <sub>2.5</sub> , µg/m <sup>3</sup>	52.5	74.0	60
5	Ozone (O <sub>3</sub> ), µg/m <sup>3</sup>	14.3	17.8	100
6	Lead (Pb), µg/m <sup>3</sup>	0.04	0.13	1.0
7	Carbon Monoxide (CO), mg/m <sup>3</sup>	0.22	0.35	2.0
8	Ammonia (NH <sub>3</sub> ), µg/m <sup>3</sup>	9.8	21.4	400
9	Benzene (C <sub>6</sub> H <sub>6</sub> ), µg/m <sup>3</sup>	Not detected	Not detected	5.0
10	Benzo (a) Pyrene (BaP) – Particulate phase only, ng/m <sup>3</sup>	24.9	44.0	1.0
11	Arsenic (As), ng/m <sup>3</sup>	<1.0	<1.0	6.0
12	Nickel (Ni), ng/m <sup>3</sup>	4.3	12.2	20.0

\* National Ambient Air Quality Standards as per the CPCB Notification dated 18.11.2009 for Industrial, Residential, Rural and other area

### **3.1.3 Predominant sources contributing to various pollutants**

In the industrial cluster the major air pollutant is Particulate Matter which is mainly from the foundries. The industrial cluster is located on both sides of NH – 209. Always there will be heavy movement of vehicle. This vehicle transportation will also contribute air quality in the cluster.

The sulphur dioxide, Oxides of Nitrogen and Carbon monoxide emissions will be generated by the cupola furnaces in foundries, oil fired furnaces in heat treatment unit, forging unit, lead recovery unit, engineering unit. SO<sub>2</sub>, NO<sub>x</sub> and CO will also be generated by the usage of fuel for boilers and DG sets in different type of industries. The Carbon monoxide will also contributed by vehicle transport in the cluster as well as surrounding area.

The possible of lead emission will be from the lead recovery unit and vehicle transport. There is no specific source for ammonia, ozone, Arsenic, nickel, benzene and benzo (a) pyrene. However benzo(a) pyrene is found in automobile exhaust fumes (especially from diesel engines).

### **3.2 Sources of Air Pollution**

In the SIDCO Industrial Estate the major air pollution sources are industries and automobile emissions. The domestic sources of the air pollution is very much insignificant when compare to the industrial sources. There are no major natural sources of air pollution in the vicinity of the industrial area as the surrounding of the estates are mostly covered with industrial and domestic buildings.

SIDCO Industrial cluster is located on both sides of National Highways 209 (Coimbatore to Dindigul). Always there will be more vehicular movement on this road. This vehicular movement will contribute to the air quality in the cluster area. Due to this there will be the presence of CO, SPM, lead benzene and benzo(a) pyrene in the air quality.

### **3.3 Air Pollution Industries in the Area / Cluster**

In this industrial cluster the major air polluting industries are foundries only. Other than foundries there are asbestos sheet manufacturing industry, rubber, lead recovery and engineering industries are located in the industrial cluster which will contribute marginal quantity of air pollution. The list of air polluting industries located in the cluster is given in **Table – 3.5.**

**TABLE – 3.5**  
**LIST OF MAJOR INDUSTRIES IN INDUSTRIAL CLUSTER**

S. No.	Name of the Industry	Size	Category
1	M/s. Auto Shell Casts Pvt. Ltd.,	Red/Large	Foundry
2	M/s. Auto Shell Perfect Moulder Ltd.,	Red/Large	Foundry
3	M/s. Indo Shell Cast Pvt. Ltd.,	Red/Medium	Foundry
4	M/s.Everest Industries Ltd., Podanur	Red/Large	Asbestos Roofing Sheet Mfg. unit
5	M/s. Craftsman Automation Pvt. Ltd., Unit-II	Red/Medium	Foundry
6	M/s.Unique Shell Mould (India) Pvt. Ltd., Unit-I	Red/Medium	Foundry
7	M/s. Unique Shell Mould (India) Pvt. Ltd., Unit-II	Red/Medium	Foundry
8	M/s.Indo Shell Mould Ltd., Unit-I	Red/Medium	Foundry
9	M/s.Indo Shell Mould Ltd., Unit-II	Red/Medium	Foundry
10	M/s. Sri Seethalakshmi Steel Castings Pvt. Ltd.,	Red/Medium	Foundry
11	M/s.Jayashree Metal Casters (P) Ltd.,	Red/Medium	Foundry
12	M/s. Titan Paints & Chemicals Ltd.,	Red/Large	Paint (Powder Coating Paint Mfg. unit)
13	M/s.KMR Metal Mart	Red/Small	Lead recovery from used batteries
14	M/s. Vignesh Metal & Alloys	Red/Medium	Foundry
15	M/s. Ferros Alloyes	Red/Medium	Foundry
16	M/s. Treads Direct Limited	Orange/Large	Tread Rubber

#### 3.4 Impact of activities of near by area on the CEPI Area

The CEPI area is surrounded by Kurichi Housing unit Phase-1 & 2 in west and SW direction, scattered engineering industries, commercial establishments and residential houses in north direction, residential houses of Ganeshapuram in east direction, scattered industries, educational institutions and software park. There is no significant impact due to the surrounding activities on the CEPI area.

The National Highway (NH-209) connecting Coimbatore and Dindigul is crossing the CEPI area. There will be more vehicular movement on this road which will contribute notable pollution load on the air quality of the CEPI area.

## **VEHICULAR POLLUTION CONTROL AND TRAFFIC MANAGEMENT**

National Highways 209 is passing through this Industrial cluster. Due to the Railway level crossing nearer to the Industrial cluster frequently there is traffic congestion and this vehicular emission contributes to the air quality in the Industrial cluster. The National Highway Authority has started construction of overbridge over Railway line at a cost of Rs.13 Crores and expected to be completed within 12 months. After completion of this overbridge the traffic flow will be uniform without any congestion.

### **3.5 Quantification of the air pollution load and relative contribution by different sources**

In the AAQ survey conducted on 23.07.2010 & 24.07.2010, it was found that the level of SPM (PM<sub>2.5</sub> & PM<sub>10</sub>) exceeded the limits prescribed by TNPCB. This may be due to the influence of continuous vehicle movement and emission from industries.

The emission of Benzo(a) Pyrene is also found to be alarmingly in excess. This is due to the emission from the Automobile exhaust and from D.G sets used by the industries during power failure. Normally there is an announced power cut of three hours daily. During this time most of the industries are using D.G Sets with diesel as fuel which may also contribute to benzo a) pyrene in the air quality.

#### **FUGITIVE EMISSIONS:**

The sources of fugitive emission within the Industrial cluster are

- i) Within the Industry due to its operation
- ii) Emission due to traffic on the road.

All the major industries has been advised to improve the house keeping and also take steps to avoid fugitive emission from the industry operations. All the roads are metal road. Most of the roads are recently laid single tract with both sides of the road are of mud roads. During traffic movement off the road in mud road there is chances of fugitive emission. There is no proposal in near future to provide tar road to the entire width of the Road. The Association has been advised to give instruction to all Industries to drive the vehicle on the road only to the extent possible so as to avoid fugitive emission.

### **3.6 Action plan for compliance and control of pollution**

All the industries in the industrial cluster has provided necessary air pollution control measures. In particular foundries have provided following APC measures.



S. No.	Source of Emission	APC measures provided
1	Induction Furnaces	Wet scrubber with stack
2	Cupola Furnaces	Wet scrubber as per NPC model
3	Shot blasting machine	Bag filter with stack

In addition to the above the foundries have proposed to improve the performance of Air Pollution Control Measures to meet the revised Ambient Air Quality Standards. The foundries has proposed to improve the existing Air Pollution Control measures by providing Dust Collector before the existing wet scrubber attached to Induction furnace to remove metal oxides so as to reduce the SPM level further. The foundries have proposed to provide waste sand Reclamation Plant (either individually or commonly). The action plan by the individual industries are detailed below :

### **1. AUTO SHELL CASTS PRIVATE LIMITED, COIMBATORE-641 021**

S. No.	Emission Source	Control Measures Provided	Approx. cost Rs.	Duration	Action Plan For Further Improvements
1	Common stack attached to induction furnace	Common stack with Wet scrubber	6.5 Lakhs	Completed	Bag filter system is installed before wet scrubber to improve the efficiency of APC measure
2	Shot blasting machine	Dust collector alone present	3.75 Lakhs	Completed	A wet settling chamber is installed after existing bag filter arrangement to control the fine dust.
3	Sand reclamation plant	We are using the waste sand as land fill material	7.35 Lakhs	Completed	Sand reclamation plant for Co <sub>2</sub> sand is provided .

### **2. AUTO SHELL PERFECT MOULDER LTD, COIMBATORE-641 021**

S. No.	Emission Source	Control Measures Provided	Appx. Cost	Duration	Action plan for further improvement
1	Common stack attached to induction furnace	Common stack with Wet scrubber	5.65 Lakhs	Completed	Bag filter system is installed before wet scrubber to improve the efficiency of APC measure

2	Cupola furnace	Scrubber unit alone present	6.5 Lakhs	Completed	Individual wet scrubber (NPC Design) is provided
3	Shot blasting	Dust collector alone present	3.65 Lakhs	Completed	A wet settling chamber is installed after existing bag filter arrangement to control the fine dust.
4	Sand reclamation plant	We are using the waste sand as land fill material	4.5 Corers	Under Technical Discussion.	Proposed to provide Thermal Reclamation plant for resin sand.

### **3. INDO SHELL CAST PRIVATE LIMITED**

S. No.	Emission Source	Control Measures Provided	Appx. Cost	Duration	Action plan for further improvement
1	DG Set 285 KVA	Stack	2.0 Lakhs	Completed	Provided acoustic enclosures.

### **4. EVEREST INDUSTRIES LIMITED, PODANUR WORKS**

S. No.	Action Plan	Appx. Cost	Duration	Remarks
1.	All internal roads to be concreted to reduce fugitive dust due to vehicular movement	Estimated cost – 1.2 Crores	30.09.2010	Laying of concrete road is under progress.
2.	To recycle the Sieve Acid Wash back to process	Estimated cost – 1.0 Lakh	Completed	Sieve washing water is recycled in the process.
3.	To provide Electromagnetic Flow Meter at STP to estimate the treated water quantity	Estimated cost – 1.0 Lakh	Completed	EMFM provided.
4	Monitoring – Lab to facilitate counting of Asbestos fiber	3.0 Lakhs	30.09.2010	Quotation Obtained.

**5. CRAFTSMAN AUTOMATION PVT. LTD., UNIT – II**

S. No.	Emission Source	Control Measures Provided	Appx. Cost	Duration	Action plan for further improvement
1	Sand reclamation plant	We are using the waste sand as land fill material	14.0 Lakhs	30.10.2010	Work is under progress for installation of sand reclamation plant.

**6. UNIQUE SHELL MOULD (INDIA) PRIVATE LIMITED, PLANT – I**

S. No.	Emission Source	Control Measures Provided	Appx. Cost	Duration	Action plan for further improvement
1	DG Set 160 KVA	Stack	2.0 Lakhs	Completed	Acoustic measures is provided during July 2010.

**7. UNIQUE SHELL MOULD (INDIA) PRIVATE LIMITED- PLANT II**

S. No.	Emission Source	Control Measures Provided	Appx. Cost	Duration	Action plan for further improvement
1	DG Set 225 & 380 KVA	Stack	20.0 Lakhs	31.08.2010	One D.G set was replaced with a new one and acoustic measures to other D.G set will be completed before 31.08.2010

**8. INDO SHELL MOULD LIMITED, PLANT – I**

S. No.	Emission Source	Control Measures Provided	Appx. Cost	Duration	Action plan for further improvement
1	Sand reclamation plant	We are using the waste sand as land fill material	90 Lakhs	31.12.2010	Quatations obtained .Technical discussion is going on .

**9. INDO SHELL MOULD LIMITED, PLANT – II**

S. No.	Emission Source	Control Measures Provided	Appx. Cost	Duration	Action plan for further improvement
1	Common stack attached to induction furnace	Common stack with Wet scrubber	14.0 Lakhs	31.08.2010	Installation of Bag filter system is under progress.
2	Sand reclamation plant	We are using the waste sand as land fill material	90.0 Lakhs	31.12.2010	Quatations obtained .Technical discussion is going on .

**10. SRI SEETHALAKSHMI STEEL CASTINGS PRIVATE LIMITED**

S. No.	Emission Source	Control Measures Provided	Appx. Cost	Duration	Action plan for further improvement
1	Induction furnace	Stack with Wet scrubber	2.0 Lakhs	31.08.2010	Order placed for Bag filter system .
2	Sand plant	To be provided	3.5 Lakhs	Completed	Cyclone separator has been provided.

**11 .JAYASHREE METAL CASTERS PVT LTD**

S. No.	Emission Source	Control Measures Provided	Appx. Cost	Duration	Action plan for further improvement
1	Knock Out Section	To be provided	2.50 Lakhs	31.08.2010	Work is under progress.

**12. TITAN PAINTS & CHEMICALS LTD.**

S. No.	Description	Cost in Rs.	Duration	Remarks
1	STP Plant to be installed	8.0 Lakhs	30.09.2010	Orders placed , STP will be completed before 30.09.2010.

**13. KMR METAL MART**

S. No.	Description	Cost in Rs.	Duration	Remarks
1	Braking section is to be mechanized.	0.5 Lakhs	31.08.2010	Battery cutting machine is under installation.
2	House Keeping is to be improved	2.0 Lakhs	31.08.2010	Providing impervious layer inside the unit is under progress.

**14. TREADS DIRECT LIMITED**

S. No.	Description	Cost in Rs.	Duration	Remarks
1	Carbon Handling system is to be improved	1.0 Lakhs	31.08.2010	Covering with G.S sheet to the carbon handling section. Work is under progress.
2	Rubber Curring – Fume Extraction System	8.0 Lakhs	31.08.2010	Installation of work nearing completion

**15. VIGNESH ALLOYS PRIVATE LIMITED**

S. No.	Description	Cost in Rs.	Duration	Remarks
1	Rotary Furnace - Wet Scrubber capacity to be improved	12.0 Lakhs	31.08.2010	Work is under progress.

**16. FERROS ALLOYES**

S. No.	Description	Cost in Rs.	Duration	Remarks
1	Induction Furnace – Bag filter and wet scrubber to be provided,	4.0 Lakhs	30.09.2010	Modification of wet scrubber and providing new bag filter is under progress.

## **ACTION PLAN REGARDING VOC MONITORING AND CONTROL**

There is no Chemical Industry which discharge volatile organic compound emission in CEPI area. However, during conducting AAQ Survey in the CEPI area necessary arrangement will be made to conduct volatile organic compound analysis also with the help of NABL accredited Lab.

### **3.6.1 Existing infrastructure facilities – Ambient air quality monitoring network**

National Ambient Air Quality Monitoring station is already functioning in this SIDCO Industrial Estate. The exact location of the station is “Top of the Industrial Estate Office”. The NAAQM is covering only routine parameters like Total Suspended Particulate Matter (TSPM), Respirable Suspended Particulate Matter (RSPM), Sulphur Dioxide and Oxides of Nitrogen (NOx). The above parameters are being monitored 2 days /week for 52 weeks per annum. A continuous AAQ monitoring station is proposed in this location to measure all parameters at all times.

### **3.6.2 Pollution control measures installed by the individual sources of pollution.**

All the industries have provided the suitable air pollution control measures. The foundry industries have provided air pollution control measures like wet scrubber to the furnaces and bag filter to the sand plant and shot blasting machine. Other industries are also provided the suitable air pollution control measures. The details of the pollution control measures adopted by individual industries are given below.

#### **1. AUTO SHELL CASTS PRIVATE LIMITED, COIMBATORE-641 021**

<b>S. No.</b>	<b>Source of Pollution</b>	<b>APC measures</b>
1	Induction Furnace – 3 Nos.	Common Wet scrubber with Bag filter and stack
2	Shot blasting machine	Bag filter with stack
3	Sand Dryer	Stack
4	DG Set – 2 Nos.	Acoustic measures with Stacks

#### **2. AUTO SHELL PERFECT MOULDER LTD, COIMBATORE-641 021**

<b>S. No.</b>	<b>Source of Pollution</b>	<b>APC measures</b>
1	Induction Furnace – 2 Nos	Common Wet scrubber with Bag filter and stack
2	Cupola Furnace - 2 Nos	Individual Wet scrubber with 11m height stack
3	Shot Blasting machine - 2 No	Individual bag filter with stack

### 3. INDO SHELL CAST PRIVATE LIMITED

S. No.	Source of Pollution	APC measures
1	Induction Furnaces – 2 No	Common bag filter & wet scrubber with stack
2	Induction Furnaces - 1 No	Bag filter & wet scrubber with stack
3	Shell moulding machines – 4 No	Common wet scrubber with stack
4	Shell moulding machines – 3 No	Common wet scrubber with stack
5	Shot Blasting machine – 2 No	Individual Bag Filters with stack
6	Generator – 3 No	Acoustic enclosure & Stack

### 4. EVEREST INDUSTRIES LIMITED PODANUR WORKS

S. No.	Source of Pollution	APC measures
1	Fibre Mill Stack	Bag House of Bag Filters with reverse Pulse Jet
2	Cement & Fly ash Feeding Stack	Bag House of Bag Filters with reverse Pulse Jet
3	Carbo Saw Stack	Bag House of Bag Filters with reverse Pulse Jet
4	Hard Ground Waste Stack	Bag House of Bag Filters with reverse Pulse Jet

### 5. CRAFTSMAN AUTOMATION PVT. LTD., UNIT – II

S. No.	Source of Pollution	APC measures
1	Diesel Fired Melting Furnaces – 3 No	Common wet scrubber with stack
2	Shot Blasting machine	Individual Bag Filters with stack
3	Generator (180 KVA)	Acoustic enclosure & Stack

### 6. UNIQUE SHELL MOULD (INDIA) PRIVATE LIMITED, PLANT – I

S. No.	Source of Pollution	APC measures
1	Electrical Furnace – 12 No & Gas operated Furnace – 1 No	Common wet scrubber with stack
2	Pit Furnace - 1 No	Stack
3	Shot Blasting machine	Bag Filters with stack
4	Generator (2 No)	Acoustic enclosure & Stack

**7. UNIQUE SHELL MOULD (INDIA) PRIVATE LIMITED- PLANT II**

S. No.	Source of Pollution	APC measures
1	Electrical Furnace – 8 No, Gas fired Furnace – 2 No & Diesel fired furnace – 1 No	Common wet scrubber with stack
2	Shot Blasting machine	Bag Filters with stack
3	Generator	Stack

**8. INDO SHELL MOULD LIMITED, PLANT – I**

S. No.	Source of Pollution	APC measures
1	Induction Furnaces – 2 No	Common bag filter & wet scrubber with stack
2	Shell moulding machines – 5 No	Common Bag filters with stack
3	Core drier	Stack
4	Generator – 3 No	Acoustic enclosure & Stack

**9. INDO SHELL MOULD LIMITED, PLANT – II**

S. No.	Source of Pollution	APC measures
1	Induction Furnaces – 2 No	Common wet scrubber with stack
2	Shell moulding machines – 10 No	Individual Bag filters with stack
3	Shot Blasting machine – 7 No	Individual Bag Filters with stack
4	Aluminium Melting Furnaces	Common wet scrubber with stack
5	Heat Treatment Furnace	Stack
6	Core drier	Stack
7	Generator – 6 No	Stack

**10. SRI SEETHALAKSHMI STEEL CASTINGS PRIVATE LIMITED**

S. No.	Source of Pollution	APC measures
1	Induction Furnace	Wet scrubber with stack
2	Shot Blasting machine	Bag Filters with stack
3	Generator (125 KVA)	Stack

**11. JAYASHREE METAL CASTERS PVT LTD**

S. No.	Source of Pollution	APC measures
1	Induction Furnace	Wet scrubber with stack
2	Shot Blasting machine	Bag Filters with stack



## 12. TITAN PAINTS & CHEMICALS LIMITED

S. No.	Source of Pollution	APC measures
1	Micro pulveriser – 1 & 2	Individual Bag Filters with stack
2	Spray paint booth – 1 & 2	Stack
3	DG set (320 KVA)	Acoustic enclosure & Stack

## 13. KMR METAL MART

S. No.	Source of Pollution	APC measures
1	Rotary Furnace – 2 No	Settling Chamber, Cyclone, U-Tube cooling Chamber, Bag filter and Wet Scrubber with stack

### 3.6.3 Technological Intervention

#### 3.6.3.1 Inventorisation of prominent industries with technological gaps

In the foundries having induction furnace have provided wet scrubber as APC measures. In order to remove metal oxides the wet scrubbers alone may not be sufficient. Hence, bag filter has been proposed before wet scrubber for effective removal of Suspended Particulate Matter.

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

Bag filters before wet scrubber has been proposed for the foundries with induction furnace to remove the metal oxides completely.

#### 3.6.3.3 Introduction and switch over to cleaner fuel

All large and medium scale foundries are having induction furnaces operated with electricity.

### 3.6.4 Need of infrastructure Renovation

The basic infrastructure like road, storm water drainage, Sewage Treatment Plant, green belt development, rain water harvesting structures are to be improved from its existing level.

#### 3.6.4.1 Development of roads

The internal roads of the industrial cluster are not fully black topped which will create more suspended particulate matter. So the existing roads should be improved by laying additional tar layers after leveling the roads. Existing roads without black tops should be provided with new tar layers or metal tops. The laying of new roads will reduce the SPM levels in the ambient air of the cluster area.

The green belt has to be improved in and around the cluster area. Adequate depth of green belt should be developed commonly around the cluster area. Industries not having open space within the industrial plot should develop the green belt in the common area within the cluster area. The trees to be planted should be selected based on the climate and soil condition of the cluster area.

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

As of now the action plans committed / proposed by the individual industries are under implementation stage. About 60% of the works have been completed, 20% of the work will be completed within three months or before December 2010.

**VXL RING TRAVELLERS**



**EVEREST INDUSTRIES LIMITED**  
**FACTORY INTERNAL ROADS**



**FACTORY INTERNAL ROADS**



**VIEW OF SEWAGE TREATMENT PLANT WITH EMFM**



**VIEW OF SEIVE WASH ACID RECYCLING SYSTEM**



**INDO SHELL CAST PRIVATE LIMITED  
GENERATOR ACCOUSTIC ENCLOSURE**



**UNIQUE SHELL MOULD INDIA PRIVATE LIMITED – PLANT - 1**





**UNIQUE SHELL MOULD INDIA PRIVATE LIMITED – PLANT - II**

**AUTOSHELL PERFECT MOULDER LIMITED**



**AUTO SHELL PERFECT MOULDER LTD  
COIMBATORE -21.**



**Induction Furnace -WET SCRUBBER AND  
Bag Filter System**

**JANATICS INDIA PRIVATE LTD**  
E-25, SIDCO INDUSTRIAL ESTATE, COIMBATORE-641021  
ETP & RO PLANT



## Indo Shell Mould Limited Tree Plantation



Planted by:Mr.K.Jagadeesain–Chairman & Managing Director(Indo Shell Mould Limited)

### **3.6.6 Managerial and Financial aspects**

The action plans proposed by the individual industries are detailed in the below sections.

#### **3.6.6.1 Cost and time estimates**

The cost and time estimate by individual industries was already in section 3.2.

#### **3.6.6.2 Identified Private/Public sector potential investors & their contribution / obligation**

This detail was already dealt in section – 3.2.

#### **3.6.6.3 Government Budgetary support requirement**

The foundries have proposed to provide waste sand Reclamation Plant (individually). Only two small scale foundries have planned to join with common facility proposed by COSMAFAN at Arasur.

NAAQM station functioning now is analyzing only basic parameters manually and not on continuous basis. A continuous AAQ monitoring station is proposed to have the air quality with all parameters at all times. Approximate estimate cost for one CAAQM station is Rs. 150 lakhs.



#### **3.6.6.4 Hierarchical and structured managerial system for efficient implementation**

In the action plan proposed, 60 to 70% was already completed and within two or three months and all action plans will be completed except continuous monitoring AAQ Station..

In order to review the progress, a steering committee with industries and association office bearers has been formed to monitor the implementation of action plans proposed commonly as well as individually by the industries. The members of the committee include the top level management of industries and their representatives. The committee will meet once in a fortnight and review the implementation status of the action plans. TNPC Board is also conducting review meeting once in 15 days to speed up the work.

#### **3.6.7 Self monitoring system in industries (Stacks, APCDs)**

The large and medium scale foundries located within the cluster area are regularly monitoring the pollution level like source emission, ambient air quality, noise levels through Tamilnadu Pollution Control Board Lab as well as private agencies.

#### **3.6.8 Data linkages to SPCB/CPCB (of monitoring devices)**

A continuous Ambient Air Quality Monitoring station is proposed in the SIDCO Industrial cluster. For this a sum of Rs.150 Lakhs is required including manpower, building and infrastructure facilities. After providing the CAAQM station the data may be linked to the TNPCBd Care Air Centre function at Corporate Office, Chennai.

### **4.0 LAND ENVIRONMENT (SOIL AND GROUNDWATER)**

#### **4.1 Soil Contamination**

There is no soil contamination in the Industrial cluster.

#### **4.2 Ground Water Contamination**

##### **4.2.1 Present Status / Quality of Ground Water:**

In the industrial cluster at Kuruchi there is no 17 category of Industries or major effluent generating industries. Only few industries (Phosphating) are generating very meager quantity of trade effluent. The trade effluent is being treated and disposed. Two industries have provided R.O.Plant so as to achieve zero discharge. There is no discharge of effluent outside the premises which causes ground water pollution.

In order to assess the quality of ground water two locations were identified (The same location which was identified for the calculation of CEPI by CPCB) and periodical samples are being collected. The report of analysis of water Quality is furnished in the **Table 4.1**.

Except conductivity all other parameters are within standards. There is no presence of any toxic substances in the ground water.

#### **4.2.2 Sources Identification:**

In the ground water quality only TDS is in excess of standards. There is no major effluent generating industry in this cluster. However, two medium scale surface treatment units have provided R.O.Plant to achieve zero discharge for even the trade effluent quantity of 1 to 2 KLD. The presence of TDS may be geological feature of that area.

#### **4.2.3 Ground Water Quality Monitoring Program**

In order to assess the quality of ground water in addition to the two locations as above two more locations was identified. Water sample will be collected from four locations once in three months to assess the water quality.

#### **4.2.4. Action Plan for Control of Pollution including Cost / time aspects**

There is no water consuming industry in this cluster and also there is no major effluent generating industries also. Only few phosphating / surface treatment industries which have generating very meager quantity of trade effluent (Less than 2 to 3 KLD). Among this two medium scale industries have provided R.O System so as to achieve zero discharge at a cost of about Rs. 10 Lakhs. The remaining small scale industries are having treatment plant to treat the trade effluent. A common Sewage Treatment Plant is proposed to treat the

sewage generated from all industries. The approximate cost of the installation of common STP is Rs.60 Lakhs exclusively for the transportation of sewage.

#### **4.2.5 Treatment and Management of contaminated Ground Water Bodies, etc.,**

There is no contaminated ground water body in this CEPI area. However, to improve the quality of ground water all the industries are taking steps to have effective rain water harvesting system.

#### **4.2.6 Impact on CEPI Score after abatement of pollution**

Based on the number and type of industries in the cluster as well as quality of ground water CEPI score for water Environment works out to 35.

The reason for this as follows:-

- i. There is no 17 category of Industries
- ii. There is no major water consuming Industry.
- iii. There is no discharge of trade effluent in the CEPI area.
- iv. The ROA of Water Quality shows only TDS is in excess.
- v. There is no presence of any toxic substance in the water quality.
- vi. There is no CEPI in this CETP area and Impact Zone also.

### 4.3 Solid Waste Generation and Management

#### 4.3.1 Waste Classification and Quantification

##### 4.3.1.1 Hazardous Waste

There is no major hazardous waste generating industries in the CEPI area. However, 8 industries are generating hazardous wastes of quantity 123.90Tons per Annum such as waste / use oil, ETP sludge etc. Out of 123.90 T/Annum of total Hazardous waste generated, 3.15 Tons are recyclable, 120.75 T are Land fillable. The details of Industries which generates hazardous waste are furnished in Table 4.2. All the industries are storing the hazardous waste in a closed room with necessary records to be maintained.

**TABLE – 4.2**  
**DETAILS OF HAZARDOUS WASTE GENERATING INDUSTRIES**

Sl. No	Name of the Industry	Hazardous Waste		Mode of disposal		
		Type	Qty.in TPA	Recyclable (TPA)	Incinerable (TPA)	Land Fillable (TPA)
1	M/s. Unique Shell Mould (India) Pvt.Limited, “Engineering Division” Plot No:7-9, South Block Private Industrial Estate, SIDCO,Coimbatore – 21.	5.1	1.08	1.08	-	-
2	M/s. Unique Shell Mould (India) Pvt.Ltd., Plant-I Plot No:2-4, South Block Private Industrial Estate, SIDCO,Coimbatore – 21.	5.1	0.495	0.495	-	-
3	M/s. Unique Shell Mould (India) Pvt.Limited, PLANT-II Plot No:2-4, South Block Private Industrial Estate, SIDCO,Coimbatore – 21.	5.2	0.405	0.405	-	-
4	Vijayeswari Ring Travellers Pvt.Limited, SF.No:166,166/3,166/4, Kuruchi Village Private Industrial Estate, Coimbatore-21	14.2	0.3	-	-	0.3

5	Best Heat Treatment Services, 53, SIDCO Industrial Estate, Coimbatore-21	14.2	0.1	-	-	0.1
6	V.X.L.Ring Travellers (P) Limited, 22, SIDCO Industrial Estate, Coimbatore – 21	34.3	0.353	-	-	0.353
7	KMR Metal mart, 1/226-B,Pollachi Main Road, Near SIDCO Railway Gate, Eachanari (PO), Coimbatore – 28	9.1	120	-	-	120 T/Y
		9.2				
8	Everest Industries Limited, Podanur Coimbatore - 21	5.1	1.17	1.17	-	-
		15.1	103.30	103.30		

#### 4.3.1.2 Bio - Medical Waste

In the Industrial cluster there is no clinic / hospital which generate Bio-medical waste. However, 9 number of hospitals are located within impact zone. The details of hospitals which generate Bio Medical Waste are furnished in Table 4.3. These Hospitals are the members of the Common Bio-Medical Treatment facility and the segregated Bio-Medical Waste is being sent to the common facility located at a distance of about 11 Km from CEPI area for treatment and disposal.

**TABLE 4.3**  
**DETAILS OF BIO-MEDICAL WASTE GENERATING HOSPITALS**

Sl. No.	Name of the Hospital	Bio Medical Waste generated in Kg/Month
1	N.R.P. Hospital, Sundarapuram, Coimbatore South Taluk.	76.70
2	Sri Balaji Hospital, Sundarapuram, Coimbatore South Taluk	102.00
3	Abirami Hospital, Sundarapuram, Coimbatore South Taluk	122.00
4	Abinand Hospital, Sundarapuram, Coimbatore South Taluk	112.50
5	G.S.Hospital Sundarapuram, Coimbatore South Taluk	8.50

6	Ganapathy Poly Clinic, Sundarapuram, Coimbatore South Taluk	75.00
7	St.Mary's Hospital Podanur,Coimbatore South Taluk	110.00
8	Koushikha Hospital, Podanur,Coimbatore South Taluk	150.00
9	S.M.Clinic, Podanur,Coimbatore South Taluk	67.20
<b>Total Quantity</b>		<b>823.90</b>

#### 4.3.1.2 Electronic Waste:

There is no Electronic / IT industry in the CEPI area. However, all the industries were advised to handle the Electronic Waste properly and it should be given to the authorized recyclers only.

#### 4.3.1.3 Municipal solid Waste / Domestic Waste / Sludge from ETPs / CETPs / STPS and other Industrial sources:

Municipal Solid Waste and Domestic Waste in CEPI area is being collected by the local body Kuruchi Municipality for further treatment and disposal. In the impact zone Kuruchi Phase I and Phase II Residential Quarters developed Tamilnadu Housing Unit is located and also other residential area are located within the impact zone area.

Sludge from ETPS has been classified as Hazardous Waste and it is being handled as per HW (M&H) Rules. There is no CETP in this CEPI area. The sludge from STP is only a Bio-sludge which is of meager quantity utilized as manure for gardening purpose.

Major Industrial solid waste from CEPI area is foundry waste sand after molding it is disposed as solid waste. This waste sand (Sodium silicate Sand and Resin Sand) can be reused after reclamation. All large and Medium Scale Foundries are having / proposed to provide waste sand reclamation plant to reuse the sand. The details are dealt in Action Points.

#### 4.3.1.5 Plastic Waste

The industries are sending the packing and other plastic waste to recyclers. The plastic waste which cannot be recycled from MSW will be co-incinerated in the cement kiln of M/s. ACC Limited, Madhukkarai Cement works, Madukkarai, Coimbatore district. The local body Kuruchi Municipality has a proposal to hand over this plastic waste to Coimbatore Corporation for disposal as mentioned above.

#### 4.3.1.6 Quantification of Waste:

Quantification of Hazardous Waste from Industries is furnished in Table 4.2.

#### 4.3.2. Identification of Waste minimization and Waste exchange options:

Foundries proposed to have waste sand reclamation plant to reuse the sand and ultimately reduces the disposal of waste sand. There is no specific waste in this cluster for exchange.

#### 4.3.3 Reduction / Reuse / Recovery / Recycle options in the co-processing of wastes

In foundry sand is used as one of the raw material for preparation of mould. The mould sand can be prepared in three methods as follows depending upon applications.

**a. Green Sand :** The sand is mixed with water , bentonite (clay), coal powder and filled in moulds and pressed in the machine to get moulds. In this method the sand is reused several times. Only 2-3% of fresh sand is used for make up. Grey iron casting are derived from this type of moulding.

**b. Sodium Silicate Sand :** The sand is mixed with sodium silicate and CO<sub>2</sub> is passed to increase the hardness of the moulds. In this method total sand is not used as such. Stainless Steel Casting are derived from this type of moulding.

**c. Resin Sand :** The sand is mixed with resin like furfuryl alcohol and allowed to set in the air for prescribed time. Stainless Steel Casting are derived from this type of moulding.

After pouring of metal in the mould cooling the mould sand is disposed as solid waste. In green sand the burnt sand is being reused again as such and the disposal of waste sand is very minimum. Whereas, in other two methods of mould the disposal of waste sand will be more.

#### **Types of Waste sand Reclamation:**

##### **a. Attrition sand reclamation**

Attrition sand reclamation technology spins two streams of sand in opposite directions in the presence of heat. The combination of sand abrasion and binder combustion free the sand particles from some binders. Attrition cannot remove all residual binders, but works well with no-bake binders. The yield from this process is a high strength recycled sand. Because all binders cannot be removed through attrition, the sand characteristics may be changed. For some casting operations the characteristics may be changed significantly enough that the sand may be ineffective for future castings. Attrition methods of sand reclamation may also produce large quantities of dust. The dust can be captured in air emission control equipment, hence contributing to the total volume of solid waste.

##### **b. Dry sand reclamation**

Dry sand reclamation relies on mechanical and pneumatic scrubbers to remove lumps and binders from sand. Mechanical scrubbing moves each sand grain through a sand-to-metal or sand-to-sand interface to remove impurities. Pneumatic scrubbers use air to propel sand

between baffles. These scrubbers are particularly good for removing clay from molding sands and binders in systems that are not baked. Dry reclamation can produce large quantities of dust. These air emissions have to be monitored and captured by control equipment. Dry sand reclamation may also not be capable of removing binders to the extent necessary for reuse in some foundry operations.

#### **c. Wet reclamation**

Wet reclamation uses water to remove sand binders. The process uses on the different water solubilities of sand and binders to separate the two. Clay bonded systems work well with water reclamation processes because the clays are very soluble in water. Sodium silicate sand binders can also be removed using wet reclamation. The sodium silicate dissolves part of the sand crystal when binding, but can be removed by exposing it to water. After the sand is soaked in a water bath it is dried and reused. Although wet reclamation was used in the 1950s and 1960s, it has been nearly eliminated as a method of sand recovery. Chemical binders are also no longer sufficiently hydrophilic to dissolve in water. Further, organic resins that do dissolve and other water soluble impurities can cause significant water contamination. The high volume of waste water and strict environmental regulations can make wet sand reclamation too expensive.

#### **d. Thermal reclamation**

Thermal reclamation uses heat in a rotary kiln, multiple-hearth furnaces, or a fluidized bed to combust binders and contaminants. In removing binders, the process can cause sand to change in composition. Combustion products from the fuel used to heat the sand and thermal cracking of the sand crystals may occur. The resulting sand may be significantly different than the original sand. Depending on the type of casting, thermally treated sand may or may not be usable. Infrared energy can also be used to thermally treat sand. This method may maintain more of the sands original composition, while still destroying binders. Infrared units, called electric sand reclamation units, are in place in the United Kingdom and Canada ("Navistar Goes Infrared," 1993). External blowers push the sand through fluidized beds, allowing the sand to directly contact the infrared radiation which breaks down the binders. The electric sand reclamation units do not produce the combustion products associated with traditional thermal reclamation processes.

### **4.3.3. Infrastructure facilities**

There is no TSD in the CEPI area as well as impact zone area. There is no contaminated solid waste disposal. Hence, the impact due to solid waste management is less.

## **5.0 PPP MODEL**

### **5.1 Identification of Project proposals for implementation in the PPP mode under the Action plan.**

In this industrial cluster all industries are having only septic tank and dispersion trench of soak pit for the treatment and disposal of sewage. This is not adequate. For all the industries in this cluster a Common Sewage treatment plant is proposed for the treatment of sewage. After treatment the treated sewage can be utilized for green belt development. It is proposed to provide a STP of capacity 500 KLD. The approximate cost for providing STP alone is Rs.60 Lakhs. The Association member units will contribute 10% of the project cost and the Government (SIDCO) will contribute the balance amount of the project.

### **5.2. Identification of Stake Holders / Agencies to be involved and to evolve financial and Managerial Mechanisms for implementation of PPP Project.**

For implementation of Common Sewage Treatment Plant the following stake holders have been identified.

- a. Preparation of proposal for implementations of STP : Industrial Association and SIDCO
- b. Land for constructing STP : SIDCO
- c. Implementation of STP : SIDCO
- d. Maintenance of STP : SIDCO & Industrial Association
- e. Financial Mechanism : Member of Industrial Association, Loan from financial institution and SIDCO.

## **6.0 OTHER INFRASTRUCTURAL MEASURES:**

### **6.1. GREEN BELT DEVELOPMENT:**

In the Industrial Estate most of the road sides are developed with well grown trees. After declaration of CEPI area the Association has find out the roads which are not developed with green belt and so far planted 200 tree saplings with the help of Industries and proposed to plant 300 tree saplings within one month in the remaining area. All large and medium scale industries have developed green belt within the industries depending upon availability of land.



## **6.2. Development of Industrial Estate:**

Proper Storm water drains to be provided for the entire Industrial estate.

## **7.0 SPECIFIC SCHEMES**

### **7.1. GIS-GPS System for Pollution Sources Monitoring**

All Large Scale Industries shall provide on line monitoring system for the specific parameters depending upon type of Industry. TNPC Board is having Care Air Centre at Corporate Office. These industries can be concentrated to the CARE AIR Centre for better monitoring.

### **7.2. Co-Processing of Waste in Cement Industries**

The Local body Kuruchi Municipality has initiated steps to handover the non-recyclable plastic waste to Coimbatore Corporation and inturn it will be sent to the nearby cement Industries for co-incineration in cement kiln.

## **8.0 PUBLIC AWARENESS AND TRAINING PROGRAMMES**

In order to create awareness among Public news regarding notification of critically polluted area and its consequences was published in newspaper. Frequent meetings were conducted with Industrial Association, SIDCO Officials, Industries and Local Body officials to impart the importance and steps to be taken to improve the environmental quality. TNPC Board is organizing training programme periodically for Industries, Local Bodies etc. on various subjects. TNPC Board has conducted one day workshop on sustainable development in Foundry during February 2010.

## **9.0 OVERALL IMPACT OF INSTALLATION / COMMISSIONING OF POLLUTION CONTROL EQUIPMENTS / MEASURES ON THE CEPI SCORE**

### **9.1 Water Environment**

In the Industrial Cluster at Kuruchi, Coimbatore District as well as in its impact zone of 2 km radius area.

- a. No 17 Category of Industry
- b. No major water consuming Industries
- c. No discharge of trade effluent in the Industrial estate.
- d. Two Medium Scale Surface coating industry provided RO plant and achieved zero discharge.
- e. Water Quality mentioned at two points within Industrial Cluster.
- f. Report of analysis of Water Quality shows only TDS is in excess and there is no presence of any toxic chemical / substances.
- g. No evidence / proof for water pollution to human and ecology within impact zone area.

Based on the above, CEPI score for water Environment works out to 35.

## 9.2. Air Environment

In the Industrial cluster at Kurichi as well as in its impact zone area.

- a. No Chemical Industry and VOC Emission
- b. All Foundries are having proper air pollution control measures.
- c. In order to achieve revised National AAQ standards Foundries have provided dust collector before wet scrubber to the Induction Furnace.
- d. The Industrial Estate is located on both sides of National Highways. Movement of Vehicles on NH may contribute CO, pb, Benzene to the air quality.
- e. AAQ Survey was conducted for the revised National AAQ parameters. The report shows there is no exceedance except CO.
- f. No evidence / proof for the air pollution to human as well as ecology within impact zone area.

Based on the above, CEPI score for Air Environment works out to 52.375

## 9.3 Land Environment

In the Industrial cluster at Kuruchi, Coimbatore District as well as in its impact zone of 2 Km radius area.

- a. No major hazardous waste generating Industry.
- b. No TSDF for hazardous waste
- c. No solid waste contaminated site.
- d. Foundries provided / proposed to provide waste sand reclamation plant to avoid haphazard disposal of waste sand.

Based on the above, CEPI score for Land Environment works out to 35.

After notification of MoEF, Government of India that Industrial Cluster at Kuruchi, Coimbatore District as critically Polluted Area, the TNPC Board has identified the possible Polluting industry, obtained action plan from individual industry. Frequent meetings conducted with the Industries and Industrial Association to speed up the implementation of improvement works, most of the industries have completed the action plan and few industries are in the process of completion stage of action plan.

After this the CEPI Score was worked out based on ground reality, actual number of industries, actual population, later Water and Air quality. Calculation of CEPI is furnished in the Annexure.

Revised Assessment of CEPI score works out to 58.2.

**10.0 ASSESSMENT OF TECHNO – ECONOMICAL FEASIBILITY OF POLLUTION CONTROL SYSTEMS IN CLUSTERS OF SMALL AND MEDIUM SCALE INDUSTRIES.**

In the industrial cluster at Kuruchi cluster of small scale industries which requires pollution control system is foundry sector only. There is no other cluster of industries in Kuruchi. All foundries have provided air pollution Control measures individually.

**11.0 Efforts shall be made to encourage use of Bio-Compost and Bio-Fertilizer along with the Chemical fertilizer in the state to minimize the unutilized chemical fertilizer runoff into the natural water resources from agriculture fields (through Govt. Policy)**

**12.0 SUMMARY OF PROPOSED ACTION POINTS**

**12.1 Short Term Action Points (within 1 Year)**

Sl. No	Action Points (Source –mitigation measures)		Responsible Stake Holders	Time Limit	Cost Rs.in Lakhs	Remarks
1	a	Induction Furnace – Bag Filter	M/s. Auto Shell Casts Private Limited	15.08.2010	6.50	Bag Filter provided and it is in operation
	b	Shot Blasting – Wet Settling Chamber		30.07.2010	3.75	Wet Settling Chamber provided and it is in operation.
	c	Waste Sand – Sand Reclamation Plant		31.08.2010	7.35	Sand reclamation plant for CO <sub>2</sub> is provided
2	a	Induction Furnace – Bag Filter	M/s. Autoshell Perfect Moulders Limited	15.08.2010	5.65	Bag Filter provided and it is in operation.
	b	Cupola Furnace-Wet Scrubber		30.07.2010	6.50	Wet scrubber (NPC design) 2 nos provided.
	c	Shot Blasting-Wet Settling Chamber		30.07.2010	3.65	Wet settling chamber is provided.it is in operation
	d	Waste Sand-Sand Reclamation Plant		31.08.2010	4.5 Crore	Under Technical discussion.
3	a.	DG Set – Accoustic Measures	M/s. Indoshell Cast Private Limited	30.07.2010	2.0	Accoustic measures completed.

4	a	Fugitive Emission-Tar Road (all internal)	M/s. Everest Industries Limited, Podanur	30.09.2010	130	Laying of concrete Road is under progress.
	b	Sieve Washing – Recycle		30.06.2010	1	Sieve Washing Water is recycled in the process.
	c	STP- Providing EMP		30.07.2010	1	EMFM provided.
	d	Monitoring – Lab to facilitate counting of Asbestos fibre		30.09.2010	3	Quotation Obtained.
5	Waste Sand – Sand Reclamation Plant		M/s. Craftsman Automation Pvt.Limited	30.10.2010	14.0	Work is under progress.
6	DG Set-Acoustic Measures		M/s. Unique Sheel Mould (India) Pvt.Limited, Plant –I	30.07.2010	2	Completed during June 2010
7	DG Set – 2 Nos – Acoustic Measures		M/s. Unique Sheel Mould (India) Pvt.Limited, Plant –II	31.08.2010	20	One DG Set was replaced with a new one and acoustic measure to other DG Set will be completed before 31.08.2010.
8	Waste Sand –Sand Reclamation Plant		M/s. Indoshell Mould Limited, Plant-I	31.12.2010	90	Quotation obtained, Technical discussion is going on.

9	Induction Furnace-Bag filter	M/s. Indoshell Mould Limited,Plant-II	31.12.2010	14	Installation of Bag filter is under progress.
	Waste Sand – Sand Reclamation Plant		31.12.2010	90	Quotation obtained, Technical discussion is going on.
10	Trade Effluent-RO System	M/s. VXL Ring Travellers (P) Limited	30.07.2010	10	R.O. Completed and it is in operation.
11	Induction Furnace – bag Filter	M/s. Sri Seethalakshmi Steel Castings (P) Limited	31.08.2010	2.0	Order Placed
	Sand Plant – Bag Filter		30.07.2010	3.5	Provided bag filter to sand plant.
12	Knockout-Wet Scrubber	M/s. Jayashree Metal Casters (P) Limited	31.08.2010	2.50	Work is under progress , It will be completed before 31.08.2010
13	Trade Effluent-RO Plant	M/s. Janatics India Pvt.Limited	30.07.2010	5	RO Plant provided and it is in operation.
14	Sewage – STP	M/s. Titan Paints & Chemicals	30.09.2010	8	Order Placed. STP will be completed before 30.05.2010

15	a	Braking Section-To be mechanized	M/s. KMR Metal Mart	31.08.2010	0.50	Battery cutting machine under installation
	b	House Keeping – To be improved		31.08.2010	2.0	Providing impervious layer around the unit is under progress
16	Carbon Handling – To be improved		Treads Direct Limited Pvt. Industrial Estate, Coimbatore - 21	31.08.2010	1.0	Covering with G.S sheet to the carbon handling section work is under progress.
	Rubber Curring – Fume Extraction System			31.08.2010	8.0	Installation of work nearing completion.
17	Rotary Furnace – Wet Scrubber capacity to be improved		Vignesh Alloys Pvt.Limited	31.08.2010	12.0	Work is under progress.
18	Induction Furnace – Bag Filter & Wet Scrubber to be provided		Ferros Alloyes, N-3, SIDCO, Coimbatore – 21.	30.09.2010	4.0	Modification of wet scrubber and providing new bag filter is under progress.
19	Pit Furnaces – APC to be improved		SKR Metal Refiners and Suppliers	31.08.2010	2.0	Work is under progress.

### 13.2 Long Term Action Points (more than 1 Year)

Sl. No	Action Points (Source –mitigation measures)	Responsible Stake Holders	Time Limit	Cost Rs.in Lakhs	Remarks
1	Providing Continuous AAQ Monitoring Stations	TNPC Board	More than One year	150	Expecting Grant from Govt. of India
2	Common STP	Industrial Association and TNSIDCO	More than one year	146	STP proposal prepared and it is in the process of applying to the Government for subsidy.



### **13.1 CEPI AS PER CURRENT STATUS**

Ambient Air Quality Survey was conducted on 23.07.2010 and 24.07.2010 in Industrial Cluster at Kuruchi, Coimbatore District by the VIMTA Labs for TNPC Board. To ascertain the Water Quality in the cluster area water samples collected on 22.07.2010 and at two locations. The parameters are analysed as per guidelines issued.

Industrial cluster at Kuruchi and its impact zone will have a maximum population of 76794 (Entire Kuruchi Village Population as per 2001 Census). There is no 17 category of industry, CETP, Common Treatment and disposal of Hazardous Waste facility in the cluster as well as its impact zone. Total number of R54 Industries in this cluster is 45 only.

The industries has taken steps to complete the action plan as already explained.

Based on the above facts and figures CEPI was calculated and the score is 53.9. The calculation is given below:

### **13.2 CEPI CALCULATION FOR KURICHI INDUSTRIAL CLUSTER, COIMBATORE** **( TAMILNADU)**

#### **1. AIR ENVIRONMENT**

##### **A. POLLUTANT**

<b>Pollutants</b>	<b>Category</b>
Benzo (a) Pyrene	- C
Lead	- B
Nickel	- C
PM10	- B
PM25	- B
A1 = 5.75	
R17 - Nil	
R54 - 45	

$$A2 = 2.5 \text{ (moderate)}$$

$$A = A1 \times A2 = 5.75 \times 2.5 = 14.375$$

### **B. PATHWAY**

<b>Pollutants</b>	<b>Average Concentration</b>	<b>Exceedence Factor</b>
Benzo (a) Pyrene	34.45	34.35
PM10	153.60	1.536
PM25	63.25	1.05

(Source : AAQ Survey Report by VIMTA Labs for TNPC Board)

$$B1 = 6 + 2 = 8$$

$$B2 = 0 \text{ (No evidence of exposure on people)}$$

$$B3 = 0 \text{ (Symptoms of Exposure of ECO – Geological feature)}$$

$$B = 8 + 0 + 0 = 8$$

### **C. RECEPTOR**

$$\text{Population Exposed} = 76,794 \text{ (Kurichi Village Population)}$$

$$C1 = 3.0$$

<b>Pollutants</b>	<b>Samples Exceeded / total no.of samples X EF</b>	<b>SNLF</b>
Benzo(a) Pyrene	2/2 x 34.45	34.45
PM10	2/2x1.536	1.536
PM25	1/2x63.25	31.625

$$C2 = 3 + 2 = 5$$

$$C3 = 5$$

$$C = (C1 \times C2) + C3 = (3.0 \times 5) + 5 = 20$$

#### **D. ADDITIONAL RISK ELEMENT**

D = 10 (No CETP / FETP / CHWDF)

AIR EPI = A + B + C + D = 14.375 + 8 + 20 + 10 = 52.375

<b>AIR EPI = 52.375</b>
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### **2. WATER ENVIRONMENT**

#### **A. POLLUTANT**

<b>Pollutants</b>	<b>Category</b>
COD	B
Nitrate Nitrogen	B
Iron Total	A
A1 = 2 + 1 = 3	
A2 = 2.5 (moderate)	
A = A1 x A2 = 3 x 2.5 = 7.5	

#### **B. PATHWAY**

<b>Pollutants</b>	<b>Average Concentration</b>	<b>Exceedence Factor</b>
Conductivity	2860 (Desirable < 2250 )	1.27
Nitrate Nitrogen	6.15 (< 15)	--

B1 = 3+1 = 4  
B2 = 0 (No reliable evidence is available)  
B3 = 0  
B = B1 + B2 + B3 = 4

**C. RECEPTOR**

$$C1 = 3$$

$$C2 = 3$$

$$C3 = 5$$

$$C = (C1 \times C2) + C3 = (3 \times 3) + 5 = 14$$

**D. ADDITIONAL RISK ELEMENT**

$$D = 10 \quad (\text{No CETP})$$

$$\text{WATER EPI} = A + B + C + D = 7.5 + 4 + 9.5 + 14 = 35$$

<b>WATER EPI = 35</b>
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**3. LAND ENVIRONMENT**

**A. POLLUTANT**

$$A1 = 3$$

$$A2 = 2.5$$

$$A = A1 \times A2 = 3 \times 2.5 = 7.5$$

**B. PATHWAY**

$$B1 = 4$$

$$B2 = 0 \quad (\text{No evidence})$$

$$B3 = 0$$

$$B = B1 + B2 + B3 = 4 + 0 + 0 = 4$$

### **C. RECEPTOR**

$$C1 = 3$$

$$C2 = 3$$

$$C3 = 5$$

$$C = (C1 \times C2) + C3 = (3 \times 3) + 5 = 14$$

### **D. ADDITIONAL RISK ELEMENT**

$$D = 10$$

$$\text{LAND EPI} = A + B + C + D = 7.5 + 4 + 14 + 10 = 35$$

<b>LAND EPI = 35</b>
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$$\begin{aligned} \text{CEPI} &= 52.375 + [ (100 - 52.375) \times 0.35 \times 0.35 ] \\ &= 52.375 + 5.83 \\ &= 58.205 \end{aligned}$$

<b>CEPI FOR KURICHI INDUSTRIAL CLUSTER = 58.2</b>
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### **13.3 CONCLUSION:**

Due to the above facts and figures and also due to the action taken by the Industries the CEPI works out to 58.2 for the Industrial Cluster, Kurichi, Coimbatore District.

In view of the above Industrial cluster, Kurichi, Coimbatore District may be denotified from the list of Critically Polluted Area.