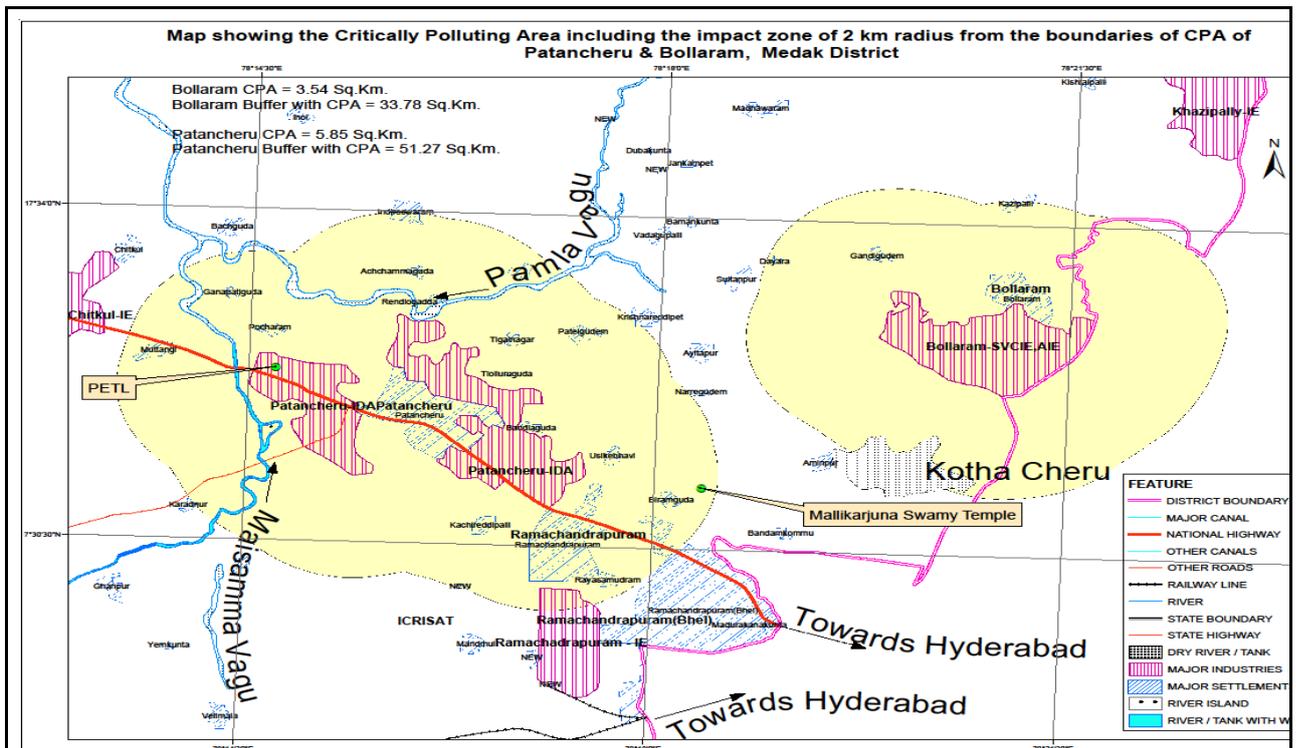


Note on the Implementation of the Action Plan and its compliance for the Critically Polluted Area of Patancheru – Bollaram in Telangana

Back Ground:

Patancheru-Bollaram was considered by Ministry of Environment, Forest & Climate Change (MoEF&CC), Govt. of India, New Delhi as a Critically Polluted Area (CPA) with a Comprehensive Environmental Pollution Index (CEPI) score of 70.07. The MoEF&CC has imposed moratorium on consideration of projects for environmental clearance to be located in critically polluted areas / industrial clusters identified by Central Pollution Control Board (CPCB).

Patancheru-Bollaram Cluster Area is located in Medak District of Telangana State. A map indicating the boundaries of the CPA (latitudes & longitudes) including the impact zone of 2 km from the boundaries and locations of all the industrial clusters is shown as below:



As per the map the CPA area is 9.35 km² and the area of impact zone of 2 Km radius from the boundaries of CPA including CPA area is 85.05 km². The total population in the CPA and the impact zone is more than one lakh.

Status of the Implementation of Action plan:

In the early 80s, many bulk drug, chemical, pesticides and other water polluting units were established in this region. There are about 130 industries in Patancheru-Bollaram area (IDA, Bollaram & IDA, Patancheru). The number of 17 category of highly polluting industries are 28 and red category industries are 102. The habitations and industries are co-existing due to development of industrialization during the past 3 decades. Initially the industries in Small Scale sector could not set up full fledged ETPs and were discharging partially treated effluents resulting in pollution of Nakkavagu and ground water in the adjacent villages.

In order to control the pollution and bring down the CEPI index, Andhra Pradesh Pollution Control Board, APPCB (Now Telangana State Pollution Control Board, TSPCB) prepared the Action Plan on Critically Polluted Area of **Patancheru - Bollaram cluster** taking into consideration of the suggestions of In-House committee.

The State Board is regularly monitoring the industries to ensure the compliance on implementation of Action Plan. The industries are also being reviewed in the Special Task Force Committee Meetings. It was observed that most of Action Points of the above Action Plan are implemented. The various steps taken to comply with the action plan are as follows:

1. Compliance status of Industries:

As per the Action Plan, 27 major Polluting industries were directed for up-gradation of treatment systems / providing zero discharge systems for improving the environmental parameters in Patancheru- Bollaram area. The industry wise status of compliance is as follows:

Sl. No.	Name and address of the industry	Action plan proposed	Compliance / Present status
1	M/s Aurobindo Pharma Ltd., Unit-I, Borapatla, Medak District.	1. The industry Proposed ZLD system with Stripper, MEE and ATFD to dispose of the HCOD & HTDS effluents. 2. Installation of R.O Plant. The RO permeate to be reused and RO rejects to be sent to MEE.	1. The industry has installed comprehensive ZLD systems consisting of Stripper, MEE and ATFD to dispose of the HCOD & HTDS effluents. ETP followed by RO system to treat the LTDS effluents. The treated effluents are

		<p>3. The industry proposed to monitor the VOC levels in and around the unit by procuring VOC monitor.</p> <p>4. Installation of video cameras within the premises for checking emissions in night time</p>	<p>being reused for makeup in cooling towers.</p> <p>2. The industry has procured handy VOC meter and recording the VOC levels inside and outside the premises.</p> <p>3. The industry installed CC cameras at ZLD facility.</p> <p>Thus the industry has complied with the action plan.</p>
2	M/s Aurobindo Pharma Ltd., Unit-V, IDA, Pashamailaram, Medak District.	<p>1. The industry Proposed ZLD system with Stripper, MEE and ATFD to dispose of the HCOD & HTDS effluents.</p> <p>2. Installation of R.O Plant. The RO permeate to be reused and RO rejects to be sent to MEE.</p> <p>3. The industry proposed to monitor the VOC levels in and around the unit by procuring VOC monitor.</p> <p>4. Installation of video cameras within the premises for checking emissions in night time.</p>	<p>The industry has installed comprehensive ZLD systems consisting of Stripper, MEE and ATFD to dispose of the HCOD & HTDS effluents. ETP followed by RO system to treat the LTDS effluents. The treated effluents are being reused for makeup in cooling towers.</p> <p>2. The industry has procured handy VOC meter and recording the VOC levels inside and outside the premises.</p> <p>3. The industry installed CC cameras at ZLD facility.</p> <p>Thus the industry has complied with the action plan.</p>
3	M/s Hetero Drugs Ltd., Unit – IV, Bonthapally, Jinnaram (M), Medak dist	<p>1. Installation of the Biological ETP followed by R.O Plant to treat the HTDS effluents.</p> <p>2. Installation of Stripper, MEE, ATFD to treat the HTDS effluents.</p>	<p>The industry has installed comprehensive ZLD systems consisting of Stripper, MEE and ATFD to dispose of the HTDS effluents. ETP followed by RO system to treat the LTDS</p>

		<p>3. Treatment of sewage in STP and using the treated effluents for gardening / plantation.</p> <p>4. Providing of VOCs monitoring in work place.</p>	<p>effluents. The treated effluents are being reused for makeup in cooling towers.</p> <p>2. The industry has procured handy VOC meter and recording the VOC levels inside and outside the premises.</p> <p>3. The industry installed CC cameras at ZLD facility.</p> <p>Thus the industry has complied with the action plan.</p>
4	M/s Hetero Labs Ltd., Gaddapotharam, Medak District.	<p>1. Installation of the Biological ETP followed by R.O Plant to treat the HTDS effluents.</p> <p>2. Installation of Stripper, MEE, ATFD to treat the HTDS effluents.</p> <p>3. Treatment of sewage in STP and using the treated effluents for gardening / plantation.</p> <p>4. Providing of VOCs monitoring in work place.</p>	<p>1. The industry has installed comprehensive ZLD systems consisting of Stripper, MEE and ATFD to dispose of the HTDS effluents. ETP followed by RO system to treat the LTDS effluents. The treated effluents are being reused for makeup in cooling towers.</p> <p>2. The industry has procured handy VOC meter and recording the VOC levels inside and outside the premises.</p> <p>3. The industry installed CC cameras at ZLD facility.</p> <p>Thus the industry has complied with the action plan.</p>
5	Hetero Drugs, Unit-I, Bonthapally, Jinnaram(M), Medak District.	<p>1. Installation of the Biological ETP followed by R.O Plant to treat the HTDS effluents.</p> <p>2. Installation of Stripper, MEE, ATFD to treat the HTDS</p>	<p>1. The industry has installed comprehensive ZLD systems consisting of Stripper, MEE and ATFD to dispose of the HTDS effluents. ETP followed by RO</p>

		<p>effluents.</p> <p>3. Treatment of sewage in STP and using the treated effluents for gardening / plantation.</p> <p>4. Providing of VOCs monitoring in work place.</p>	<p>system to treat the LTDS effluents. The treated effluents are being reused for makeup in cooling towers.</p> <p>2. The industry has procured handy VOC meter and recording the VOC levels inside and outside the premises.</p> <p>3. The industry installed CC cameras at ZLD facility.</p> <p>Thus the industry has complied with the action plan.</p>
6	M/s Aurobindo Pharma Ltd., Unit – VIII, Gaddapotharam, Medak District.	<p>1. The industry Proposed ZLD system with Stripper, MEE and ATFD to dispose of the HCOD & HTDS effluents.</p> <p>2. Installation of ETP followed by R.O Plant. The RO permeate to be reused and RO rejects to be sent to MEE.</p> <p>3. The industry proposed to monitor the VOC levels in and around the unit by procuring VOC monitor.</p> <p>4. Installation of video cameras within the premises for checking emissions in night time.</p>	<p>1. The industry has installed comprehensive ZLD systems consisting of Stripper, MEE and ATFD to dispose of the HTDS effluents. ETP followed by RO system to treat the LTDS effluents. The treated effluents are being reused for makeup in cooling towers.</p> <p>2. The industry has procured handy VOC meter and recording the VOC levels inside and outside the premises.</p> <p>3. The industry installed CC cameras at ZLD facility.</p> <p>Thus the industry has complied with the action plan.</p>
7	M/s Neuland Laboratories Ltd., Unit – II, Pashamailaram, Medak District.	<p>1. The industry proposed stripper, MEE followed by ATFD and RO systems to be installed.</p> <p>2. Installation of ETP followed by</p>	<p>The industry has installed comprehensive ZLD systems consisting of Stripper, MEE and ATFD to dispose of the HTDS</p>

		<p>R.O Plant. The RO permeate to be reused and RO rejects to be sent to MEE.</p> <p>3. The industry proposed to monitor the VOC levels in and around the unit by procuring VOC monitor.</p> <p>4. Installation of video cameras within the premises for checking emissions in night time</p>	<p>effluents. Biological ETP (sequential bio reactors and thermal oxidation technology) followed by RO system to treat the LTDS effluents. The treated effluents are being reused for makeup in cooling towers.</p> <p>2. The industry has procured handy VOC meter and recording the VOC levels inside and outside the premises.</p> <p>3. The industry installed CC cameras at ZLD facility.</p> <p>Thus the industry has complied with the action plan.</p>
8	M/s. Piramal Health Care Ltd., Unit-II, Digwal (V), Kohir (M), Medak District.	<p>1. The industry proposed stripper, MEE followed by ATFD and RO systems to be installed.</p> <p>2. Installation of ETP followed by R.O Plant. The RO permeate to be reused and RO rejects to be sent to MEE.</p> <p>.</p>	<p>1. The industry has installed Combined comprehensive ZLD systems to all the three units at one place after merging of the units consisting of Stripper, MEE and ATFD to dispose of the HTDS effluents. ETP followed by RO system to treat the LTDS</p>
9	M/s. Piramal Health Care Ltd., Unit-III, Digwal (V), Kohir (M), Medak District.	<p>1. The industry proposed stripper, MEE followed by ATFD and RO systems to be installed.</p> <p>2. Installation of ETP followed by R.O Plant. The RO permeate to be reused and RO rejects to be sent to MEE.</p>	<p>effluents. The treated effluents are being reused for makeup in cooling towers.</p> <p>2. The industry has provided Continuous Ambient Air Quality Monitoring Station in the premises and connected the PCB</p>
10	M/s. Piramal Health Care Ltd., Unit-I, Digwal (V), Kohir (M),	<p>1. The industry proposed stripper, MEE followed by ATFD and RO systems to be installed.</p>	<p>website.</p> <p>3. The industry installed CC cameras at ZLD facility.</p>

	Medak District.	2. Installation of ETP followed by R.O Plant. The RO permeate to be reused and RO rejects to be sent to MEE	Thus the industry has complied with the action plan
11	M/s.Neuland Laboratories Ltd, Unit-I, Bonthapally, Medak District.	<p>1. The industry proposed stripper, MEE followed by ATFD and RO systems to be installed.</p> <p>2. Installation of ETP followed by R.O Plant. The RO permeate to be reused and RO rejects to be sent to MEE.</p> <p>3. The industry proposed to monitor the VOC levels in and around the unit by procuring VOC monitor.</p> <p>4. Installation of video cameras within the premises for checking emissions in night time.</p>	The industry has installed comprehensive ZLD systems to treat the HTDS and LTDS effluents. The treated effluents are being reused for makeup in cooling towers. Thus the industry has complied with the action plan.
12	M/s Aurobindo Pharma Ltd, Unit-IX, Gundlamachanoor, Medak District.	<p>1. The industry Proposed ZLD system with Stripper, MEE and ATFD to dispose of the HCOD & HTDS effluents.</p> <p>2. Installation of ETP followed by R.O Plant. The RO permeate to be reused and RO rejects to be sent to MEE.</p> <p>3. The industry proposed to monitor the VOC levels in and around the unit by procuring VOC monitor.</p> <p>4. Installation of video cameras within the premises for checking emissions in night time.</p>	<p>The industry has installed comprehensive ZLD systems consisting of Stripper, MEE and ATFD to dispose of the HTDS effluents. ETP followed by RO system to treat the LTDS effluents. The treated effluents are being reused for makeup in cooling towers.</p> <p>2. The industry has procured handy VOC meter and recording the VOC levels inside and outside the premises.</p> <p>3. The industry installed CC cameras at ZLD facility.</p>

			Thus the industry has complied with the action plan.
13	M/s. Arch Pharma Labs Ltd., Gaddapotharam (V), Medak District.	The industry proposed zero liquid discharge system consisting of up-gradation of primary treatment, installation of stripper, MEE, ATFD, RO system and boiler.	The industry has installed comprehensive ZLD systems to treat the HTDS and LTDS effluents. The treated effluents are being reused for makeup in cooling towers. Thus the industry has complied with the action plan.
14	M/s Matrix Laboratories Ltd, Unit - I, Gaddapotharam (V), Medak District.	<ol style="list-style-type: none"> 1. The industry proposed upgradation of Biological ETP, RO System for Low TDS with increased capacity. 2. The industry proposed up gradation of Stripper, MEE, ATFD for treatment and disposal of HCOD & HTDS effluent. 3. The industry proposed to monitor the VOC levels in and around the unit by procuring VOC meter. 	<ol style="list-style-type: none"> 1. The industry Upgraded the treatment systems to achieve comprehensive ZLD systems to treat the HTDS and LTDS effluents. The treated effluents are being reused for makeup in cooling towers. 2. The industry has provided Continuous Ambient Air Quality Monitoring Station in the premises. 3. The industry installed CC cameras at ZLD facility. <p>Thus the industry has complied with the action plan.</p>
15	M/s Matrix laboratories, Unit-VII, IDA, Pashamailaram, Medak District.	<p>The industry proposed upgradation of Biological ETP, RO System for Low TDS with increased capacity.</p> <p>The industry proposed upgradation of Stripper, MEE, ATFD for treatment and disposal of HCOD & HTDS effluent.</p> <p>The industry proposed to monitor</p>	<p>The industry Upgraded the treatment systems to achieve comprehensive ZLD systems to treat the HTDS and LTDS effluents. The treated effluents are being reused for makeup in cooling towers.</p> <ol style="list-style-type: none"> 2. The industry has provided Continuous Ambient Air Quality

		the VOC levels in and around the unit by procuring VOC meter.	Monitoring Station in the premises. 3. The industry installed CC cameras at ZLD facility. Thus the industry has complied with the action plan.
16	M/s Covalent Laboratories Pvt Ltd, Hatnoor (M), Medak Dist.	The industry proposed up gradation of reactor type evaporators with Stripper, MEE followed by ATFD system to treat the HTDS effluents. The LTDS effluents are proposed to send to CETP for further treatment.	As per the action plan, the industry was directed to upgrade the treatment systems with stripper, MEE followed by ATFD to treat the HTDS effluents. However, the industry has installed comprehensive ZLD system to treat the HTDS and LTDS effluents. The industry has achieved ZLD. Thus the industry has complied with the action plan.
17	M/s MSN Pharma Chem Pvt.Ltd., IDA, Pashamailaram, Medak District.	The industry proposed up gradation of reactor type evaporators with Stripper, MEE followed by ATFD system to treat the HTDS effluents. The LTDS effluents are proposed to send to CETP for further treatment.	As per the action plan, the industry was directed to upgrade the treatment systems with stripper, MEE followed by ATFD to treat the HTDS effluents. The industry has installed stripper, MEE and ATFD and the same are under operation as per the action plan. In addition, the industry is in the process of constructing biological ETP followed by RO to treat the LTDS effluents. Presently, the LTDS effluents are sent to M/s PETL, Patancheru. Thus the industry has complied with the action plan.

18	M/s Nitya Laboratories Ltd., IDA, Pashamailaram, Medak District.	The industry proposed up gradation of reactor type evaporators with Stripper, MEE followed by ATFD system to treat the HTDS effluents. The LTDS effluents are proposed to send to CETP for further treatment.	The industry is not in operation since one year. However the industry has provided stripper, MEE followed by ATFD as per the action plan.
19	M/s Porus Laboratories (P) Ltd., Unit – I, Kodad (M), Nalgonda district.	The industry proposed up gradation of reactor type evaporators with Stripper, MEE followed by ATFD system to treat the HTDS effluents.	As per the action plan, the industry was directed to upgrade the treatment systems with stripper, MEE followed by ATFD to treat the HTDS effluents. The industry has installed stripper, MEE and ATFD and the same are under operation as per the action plan. In addition, the industry constructed biological ETP followed by RO to treat the LTDS effluents. Presently, the industry stopped sending the LTDS effluents to M/s PETL, Patancheru and achieved ZLD. Thus the industry has complied with the action plan.
20	M/s Porus Laboratories (P) Ltd., Unit – II, Bibinagar (V&M), Nalgonda District.	The industry proposed up gradation of reactor type evaporators with Stripper, MEE followed by ATFD system to treat the HTDS effluents.	As per the action plan, the industry was directed to upgrade the treatment systems with stripper, MEE followed by ATFD to treat the HTDS effluents. The industry has installed stripper, MEE and ATFD and the same are under operation as per the action plan. In addition, the industry

			constructed biological ETP followed by RO to treat the LTDS effluents. Presently, the industry stopped sending the LTDS effluents to M/s PETL, Patancheru and achieved ZLD. Thus the industry has complied with the action plan.
21	M/s Virchow Petro Chemicals Ltd. Patancheru, Medak District.	The industry proposed stripper for recovery of solvents in effluents. The industry proposed RO plant to treat the Boiler blow down, cooling tower blow down.	The industry has installed stripper, calendria type evaporation systems followed by ATFD to treat the HTDS and LTDS effluents. The treated effluents are being reused for makeup in cooling towers. Thus the industry has complied with the action plan.
22	M/s Suven Life Science, Pashamailaram, Medak District	1. The industry proposed MEE and RO plant for treatment of process effluents. 2. The Industry proposed ETP to treat the LTDS effluents.	The industry has installed stripper, MEE followed by ATFD to treat the HTDS effluents. The industry installed RO to treat the MEE condensate along with LTDS effluents. The industry is in the process of providing biological ETP to achieve comprehensive ZLD system. The treated effluents are being reused for makeup in cooling towers. During the visit, it was observed that the biological ETP is under construction and is scheduled to commission in next 3 months. Thus at present the industry has achieved partial compliance towards the action

			plan submitted by them.
23	M/s. Everest Organics Ltd., Aroor (V), Sadasivapet (M), Medak District.	<p>The industry proposed up gradation of reactor type evaporators with Stripper, MEE followed by ATFD system to treat the HTDS effluents.</p> <p>The industry proposed recovery system for recovery of Ammonium Sulphate from the effluents and similar system for recovery of Sodium Sulphate.</p> <p>2. The industry installed one falling film evaporator for evaporating low TDS effluents generated in Q- Acid production and completed trial operations for recovery of NaCl which is used in chilling plant.</p> <p>3. Taking actions for input / output modifications of process control and R & D towards waste minimization and as well as reduce the pollution loads.</p> <p>4. Water conservation practices are adapted by reusing the FE condensate and steam condensate.</p>	<p>As per the action plan the industry was directed to provide stripper, MEE followed by ATFD to evaporate the HTDS effluents. The industry has provided stripper, MEE followed by ATFD to treat the HTDS effluents. The industry provided RO plant.</p> <p>The ETP is under installation for achieving ZLD.</p> <p>Thus, the industry has complied with the action plan.</p>
24	M/s Lee Pharma Ltd., Gaddapotharam, Medak District.	<p>The industry proposed up gradation of reactor type evaporators with Stripper, MEE followed by ATFD system to treat the HTDS effluents.</p>	<p>The industry provided stripper, MEE followed by ATFD to evaporate the HTDS effluents. The industry has provided ETP to treat the LTDS effluents and the treated effluents are being sent to PETL.</p>

			In addition, the industry is in the process of upgrading biological ETP to achieve ZLD. The industry has complied with action plan.
25	M/s. PETL (Common ETP), Patancheru, Medak District.	PETL proposed installation of Membrane Bio Reactor.	The CETP has installed MBR and is in operation. The CETP is consistently meeting the outlet standards as prescribed in the Joint action plan. Thus the CETP complied with the action plan.
26	M/s. Chaitanya Chlorides, Pashamailaram, Medak District.	The industry proposed three Graphite falling film vapor absorbers (2 X 250 kg/hr and 500 kg/hr) in series for effective control of HCl emissions from the process. Proposed Installation of R.O plant for water treatment for reduction of water consumption for Boiler feed and cooling tower make up and chilling plant.	The industry provided three Graphite falling film vapor absorbers (2 X 250 kg/hr and 500 kg/hr) in series for effective control of HCl emissions from the process and they are in operation. In addition, as per the directions of the Hon'ble NGT, New Delhi the industry installed MEE, ATFD, ETP followed by RO system to achieve ZLD. Thus the industry has complied with action plan
27	M/s Hyderabad Chemical Products Ltd, Pashamailaram, Medak dist.	1. The industry Proposed fume extraction and scrubbing system for centrifuges and reactors for effective scrubbing of solvents like Ethyl Acetate and Di-chloro methane and VOCs emissions into atmosphere. 2. The industry proposed Stripper, MEE and ATFD to evaporate the	The industry provided stripper, MEE followed by drum type drier to evaporate the HTDS effluents. To control the process emissions, the industry has provided fume extraction with scrubbing system for centrifuges and reactors. The LTDS effluents are pretreated and sent to common ETP for further

		high TDS effluents and to separate salts.	treatment. The industry is in the process of going for comprehensive ZLD system comprising of Biological ETP for low TDS effluents and ATFD in place of drum type drier as per the action plan as informed by the industry. The detailed action plan with firm date of commitment shall be obtained from the industry. During the visit lots of hazardous waste was seen dumped within the industrial premises. This may be due to that the industry is not regularly disposing off the same to TSDF.
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Apart from the above, M/s Dr. Reddy's Laboratories, Unit I, II & III at Bollaram have also provided the Zero Liquid Discharge (ZLD) facilities even before the preparation of the Action Plan. M/s Aurobindo Pharma Ltd, Unit-II, a formulation unit, though provided ZLD unit, is still sending their treated low TDS effluent (about 15KL/Day) to M/s PETL.

2. Establishment of a Common Effluent Treatment Plant by name M/s Patancheru Enviro Tech Ltd., (PETL) in Patancheru:

M/s. PETL, Patancheru was established in 1994. This CETP has 106 No. of member industries. All the member industries are sending about 160 to 200 tankers (1600KL to 2000KL) of pretreated low TDS effluents (TDS less than 5000 mg/L) every day to the CETP for treatment and disposal. The CETP is designed for treatment of 7500 m³/day of industrial effluents. M/s. PETL was not meeting the discharge standards. The SPCB has taken specific steps from 01.02.2009 for improving the performance of PETL. The Outlet of PETL has been connected to 18 Km Pipe line for transportation of treated effluents from the outlet of PETL to K&S main sewer which is connected to the newly constructed Sewage Treatment Plant (STP), Amberpet and finally discharging the treated waste water into river Musi. **The officials of the Board are regularly monitoring the inlet and outlet of M/s. PETL,**

Patancheru & outlet of Amberpet STP and they are meeting the prescribed standards. Further, M/s. PETL has installed standby power supply to CETP through D.G. sets of capacity 2 x 725 KVA. And also installed online VOC, TDS, TOC and flow meters at the outlet. During the visit it was observed that all the systems of the CETP were functioning satisfactorily.

3. Status of Air quality:

The main sector of industries located in the Patancheru - Bollaram area are Bulk drug & Pharmaceutical and Steel industries. Bulk drug & Pharmaceutical industries use different types of solvents in their production and there is considerable loss of solvents into air, effluents and solid wastes causing air pollution in the area. The major industries have installed solvent recovery units for recovery and reuse of solvents so as to reduce release of solvents into atmosphere. Some of the small scale units which were recovering the solvents through simple distillation (Reactor type) have now installed sub coolers to improve recovery and remaining small scale units are giving their spent solvents to standalone solvent recovery units for recovery of solvents. The performance of the standalone recovery units needs improvement. In order to control VOCs emissions causing odour pollution, major industries installed steam stripper and Multiple Effect Evaporator followed by ATFD systems for removal of solvents and salts by means of heating / evaporating of High COD/ High TDS effluents.

4. Solid waste Management:

Until the year 2002, the industries in Patancheru - Bollaram area were storing hazardous wastes in their premises or in off site storage area. There were instances of dumping of solid wastes around the industrial area / dumping into the water bodies resulting in contamination of land environment. The Board has closely monitored the industries to lift the waste existed in illegal dumpsites and also to regularly sending the Hazardous waste to the Treatment, Storage and Disposal Facility (TSDF) located at Dundigal in Ranga Reddy District. In the year 2006, Common Hazardous waste Incinerator was established in TSDF for scientific disposal of incinerable hazardous waste. In addition, the Board explored the possibility of disposal of incinerable hazardous waste through co-incineration in cement kilns. Thus, a part of incinerable waste is disposed through co-incineration. This resulted in low cost and effective disposal option for incinerable waste. The Board also completed the inventorisation of hazardous waste generation in the area for effective tracking of waste disposal.

During the visit to the TSDF, the team observed that no proper drains and catch pits have been provided around the land fill site to collect the leachates especially around the present operational land fill site.

5. Domestic effluent management:

In Patancheru and Bollaram areas, the major habitations are M/s. BHEL Town ship and newly developed residential areas in GHMC i.e., Chandanagar, Miyapur, Ashok Nagar, Ramchandrapuram and Patancheru and other major habitation is at IDA, Bollaram. At present, untreated / partially treated domestic effluents from Miyapur, Chandanagar, Ramchandrapuram, Patancheru and Bollaram areas are joining Nakkavagu through different natural streams.

M/s. BHEL has two Treatment Plants. One is of 2 MGD capacity at Ashoknagar, Ramchandrapuram (M) for treatment of domestic effluents generated in their township and another STP of 600 KLD for treatment of domestic and industrial effluents generated in the factory. During the visit it was observed that both the treatment plants were not working properly.

In the town ship STP there was no proper approach road to verify all the sections of the STP. Over the years many outlets from the nearby residential areas have been connected to the inlet line of this STP. So the facility is catering to the treatment of many of the nearby residential areas also. Flow meters were not provided. Under these circumstances, the operators do not know how much of the waste water is being treated and discharged. The untreated / partially treated water is discharged into Isukavagu which in turn joins Nakkavagu.

Construction of the new 8 MGD treatment facility to treat the industrial and the domestic effluent is in progress in the BHEL premises and is scheduled to be completed by December 2015. During the inspection of the same it was observed that the treatment plant do not include facilities of sludge drying beds, flow meters, online monitors and camera. BHEL officers could not provide any information on these aspects. The organization has also not taken Consent to Establish from Pollution Control Board.

In GHMC residential areas of Miyapur, Chandanagar etc., there is no STP for the treatment of domestic effluents, as a result these un-treated effluents are joining Isukavagu. M/s. HMWS & SB, Hyderabad is planning to construct 30 MLD capacity STP at Lingam Kunta Cheruvu, Rangareddy District.

In IDA, Bollaram also no treatment facility exists at present for the treatment of domestic effluents generated from small scale non-chemical industries and huge habitation developed in and around the industrial area. The un-treated waste water is joining Asanikunta which in turn joins Isukavagu at Patancheru. It was informed by the Board officials that the Joint Inspection team constituted by Hon'ble NGT, New Delhi in the matters of O.A. 100 of 2014 recommended to construct a ETP / STP on the upstream of Asanikunta. As per orders of the NGT, the Board awarded work order to M/s EPTRI for characterization and quantification of the waste water generation and proposals for providing STPs. The EPTRI report is awaited.

The work is yet to be started in both these areas. The joint inspection team also collected the water samples from Asanikunta Tank in March 2015 and confirmed that it has been highly contaminated by the industrial and domestic discharges. The analysis results of Asanigunta Tank water sample are presented below for few important parameters:

Sl. No.	Parameters	Unit	Test Method	Concentration
1	Color	Pt-Co Units	2120 - B	600
2	Odour	TON Unit	2150 - B	>200
3	pH	---	4500H ⁺ B	7.8
4	E.C.	µmhos/cm	2510 - B	13600
5	Oil & Grease	mg/L	5520 - B	10.2
6	SS	mg/L	2540 - D	174
7	DO	mg/L	4500 O-C	Nil
8	COD	mg/L	5220 - B	1666
9	BOD	mg/L	IS:3025	539
10	NH ₃ - N	mg/L	4500 NH ₃ -C	129
11	TKN	mg/L	4500 N _{org} -B	173
12	Boron as B	mg/L	3120 - B	81
13	Total Coliforms	MPN/100ml	9221 A&B	54,000
14	Fecal Coliforms	MPN/100ml	9221 E	14,000

During our visit it was observed that the Asanikunta is highly contaminated by discharges of industrial and domestic waste and still continued to be polluted.

6. Monitoring:

i. Ground water:

TSPCB is continuously monitoring the ground water in the surrounding 18 villages of “Patancheru-Bollaram” areas for drinking water parameter as per IS – 10500, 1991. The monitoring results indicate that the parameters viz., pH, TDS, Nitrates, Heavy Metals such as Zinc, Lead, Cadmium, Chromium, Nickel are within the permissible limits.

However, the Joint Inspection Team constituted as per the order of the Hon’ble NGT, New Delhi, which monitored the ground water at 7 locations in March 2015 in and around Patancheru – Bollaram industrial area has reported some of the quality parameters exceeding the limits. The analysis results are presented in the Table given below:

Sl. No.	Parameters	RESULTS						
		GW1	GW2	GW3	GW4	GW5	GW6	GW7
1	pH	6.7	6.5	6.8	6.6	7.0	7.5	7.0
2	E.C, μ mhos/cm	6280	5500	2160	1680	968	1280	1160
3	NO ₃ -N, mg/L	70	0.10	0.22	0.14	0.15	0.16	0.23
4	NH ₃ -N, mg/L	BDL	2.2	BDL	2.2	2.0	2.0	1.6
5	TKN, mg/L	BDL	4.0	BDL	4.2	6.0	4.0	4.0
6	Fluoride as F ⁻ , mg/L	0.66	1.53	0.86	1.13	0.97	1.34	1.64
7	Total Phosphorous as P, mg/L	0.42	0.32	0.20	0.57	0.06	0.15	0.86
8	Boron as B, mg/L	0.22	0.46	0.21	0.13	0.07	0.15	0.18
9	Total Coliforms, MPN/100ml	49	<1.8	<1600	33	70	9.2	920
10	Fecal Coliforms, MPN/100ml	6.8	<1.8	9.2	6.8	17	4	26

Note:

1. GW1: Bore Well in Pashamailaram IDA
2. GW2: Bore Well in Bollaram IDA
3. GW3: Bore Well in Bollaram Village
4. GW4: Bore Well in Kistareddypet Village
5. GW5: Bore Well in Patancheru IDA

6. GW6: Bore Well in Muttangi Village

7. GW7: Bore Well in Inole Village

ii) **Surface Water:**

The surface water quality in and around Patancheru-Bollaram was also monitored by the Joint Inspection Team at four locations and reported high values. Pungent smell emanating from Asanikunta Tank was noticed. In case of samples collected at Isukavagu at Pocharam Bridge and Nakkavagu at Bachugudem Bridge, high values of Total Fecal Coliforms have been reported as these drains mainly carry untreated sewage discharged from RC Puram and other colonies located in the upstream. The results for few important parameters for the samples collected from the above locations are tabulated below:

Sl. No.	Parameters	RESULTS			
		SW1	SW2	SW3	SW4
1	Color, Pt-Co Units	600	500	40	50
2	Odour, TON Unit	>200	4	17	12
3	pH	7.8	8.1	7.4	7.4
4	E.C., μ mhos/cm	13600	6400	1320	1380
5	Oil & Grease, mg/L	10.2	5.2	3.0	3.0
6	SS, mg/L	174	64	10	24
7	DO, mg/L	Nil	Nil	1.1	Nil
8	COD, mg/L	1666	382	49	39
9	BOD, mg/L	539	114	19	10
10	NH ₃ – N, mg/L	129	BDL	12	13.4
11	TKN, mg/L	173	BDL	18	18.4
12	Boron as B, mg/L	81	12.01	0.13	12
13	Total Coliforms, MPN/100ml	54000	160000	54000	160000
14	Fecal Coliforms, MPN/100ml	14000	3500	2100	22000

- Note:**
1. SW1: Asanigunta Tank, Bollaram IDA.
 2. SW2: Kistareddypet Tank, Kistareddypet.
 3. SW3: Isukavagu drain at Bocharam bridge in Patancheru
 4. SW4: Nakkavagu drain at Bachugudem Bridge in Patancheru

iii. Stack and Ambient Air Quality:

1. A direction has been issued to all the 17 category of industries to provide on line stack and liquid effluent monitors and upload the data to the SPCB and CPCB servers. During the visit it was observed that some of the industries are yet to connect to Boards server.
2. By and large the industries are monitoring the ambient air quality manually for PM₁₀, PM_{2.5}, SO₂ and NO_x. This is not in compliance with the AAQ Notification issued by CPCB which mandates to monitor 12 parameters. Also the procedure followed to monitor is not in accordance with the CPCB guidelines.
3. SPCB is monitoring the AAQ at 4 locations in and around the area. Presently monitoring is done manually. Continuous Ambient Air Quality Monitoring (CAAQM) stations proposed are not yet set up. Also monitoring is not conforming to the protocol as far as parameters are concerned. PM₁₀ and sometimes PM_{2.5} values are found exceeding. This may also be due to heavy vehicular transport and bad road conditions.

The Joint Inspection Team which had carried out AAQM in and around Patancheru-Bollaram area as per the directions of Hon`ble NGT, New Delhi at four locations in April 2015 found PM₁₀ and PM_{2.5} exceeding at some locations. The monitored results are shown below:

Sl. No.	Parameter	Results				NAAQ Standards (24hrs)
		AA1	AA2	AA3	AA4	
1	PM ₁₀ , µg/m ³	85.7	111.6	153	161.4	100
2	PM _{2.5} , µg/m ³	51.4	70.02	58.5	66.1	60
3	SO ₂ , µg/m ³	16.1	17.7	18.7	18.7	80
4	NO ₂ , µg/m ³	19.3	26.5	21.0	24.05	80
5	NH ₃ , µg/m ³	11.6	14.8	12.3	13.7	400
6	Lead, µg/m ³	<0.001	<0.001	<0.001	<0.001	1.0
7	Arsenic, ng/m ³	<0.001	<0.001	<0.001	<0.001	6

8	Nickel, ng/m ³	13.4	6.3	12.6	13.1	20
9	Benzene, µg/m ³	<0.01	<0.01	<0.01	<0.01	5
10	Benzo (a) Pyrene, ng/m ³	<0.01	<0.01	<0.01	<0.01	1.0

Note:

1. AA1: ICRISAT (IRS Quarters), Patancheru
2. AA2: TSPCB, ZO, RC Puram
3. AA3: Bollaram IDA
4. AA4: PETL, Patancheru

7. Epidemiological and Genetic studies:

The Board had engaged Institute of Genetics, Osmania University for conducting a study on “Epidemiological and Genetic Studies on People Living in Nakkavagu and River Musi basin” in the year 2009. The study was been conducted during 2004–2010. It shows that there are no adverse effects on health and cytogenetic damage in people living in different villages of Nakkavagu. The heavy metal levels in the blood samples of people of these villages were also within permissible limits.

However, during the visit the representatives of the residents of Miyapur, Nizampet, Bachupally and surrounding areas made complaints on chemical pollution menace in these areas due to release of pungent gases at random, most of the times in night and early hours of the day causing serious health hazards. They also referred to the representations made to MOEF&CC and CPCB in August 2014 with follow up reminders in August 2015. When the matter was discussed with the Pollution Control Board Officers, it was informed that the Board has identified certain units causing such pollution and asked to suspend the operations. However, some instances of illegal gas releases were still noticed and actions taken against such units.

8. Compensation Paid to Farmers:

As per the directions of the Hon’ble Supreme Court and Hon’ble High Court, the State Govt., has paid an amount of Rs.2,34,35,535/- to the pollution affected farmers as compensation on “polluters pay principle” for crop damaged in 14 villages for the period from 1984 to 1999. The Fact Finding Committee (FFC) recommended to pay

Rs.72,08,471=25 towards crop damage compensation for a further period of three years i.e. up to 2002 (from 1999-2002). The disbursement is in progress.

As per the Fact Finding Committee recommendations, the then Govt. of Andhra Pradesh has constituted a special Taskforce exclusively for Medak District vide G.O.Ms.No.76, Dt.28.02.2009 which has started functioning from 28.03.2009. However, this was observed to be replaced with a Rolling Task Force, to look after the pollution related cases and is under direct control of Head Office.

9. Drinking water supply to the pollution affected villages:

As per the directions of the Hon'ble Supreme Court and Hon'ble High Court, the State Govt., is supplying drinking water to 20 villages in Medak Dist.

10. Banning establishment / expansion of polluting industries:

- i. On recommendation of SPCB, the State Government vide GO Ms.No.62, dated 28.04.1999 and GO Ms.No.95, dated 21.09.2007 has issued ban notification prohibiting establishment / expansion of certain polluting industries in and around IDAs / IEs including industrial areas located in "Patancheru-Bollaram" areas. The board has also issued direction to:-
- ii. Segregate the effluents into High Total Dissolved Solids (High TDS) and Low Total Dissolved Solids (Low TDS) streams. The High TDS effluents are force evaporated individually within the premises of industries and salts are sent to Treatment Storage and Disposal Facility (TSDF), Dundigal. The low TDS pre-treated effluents are transported to CETP by the industries in dedicated tankers following the manifest system.
- iii. Close the outlets, which may otherwise join the water bodies. Construct separate drains for storm water / rain water and effluents.
- iv. Increase the product yields, thereby reducing wastes and replacement of hazardous chemicals & solvents with environmentally safer compounds, e.g. Replacement of Benzene solvent with Toluene, Substitution of Chlorine with air oxidation etc.,
- v. Recover low value by-products from waste streams like Potassium Sulphate, Aluminum Chloride, Sodium Sulphate etc., thereby reducing TDS in effluent.
- vi. Dispose certain waste streams as raw materials for other process industries like disposal of Spent Sulphuric Acid to Cement Industries for conversion to Gypsum, Disposal of Iron Sludge to cement industries etc.

- vii. Install Solvent Recovery Plants. Many of the bulk drug units have installed solvent recovery plants to recover and reuse valuable solvents, which otherwise were entering effluents streams earlier, thereby reducing COD load. Stand alone common solvent recovery plants have also been setup to recover solvent from small scale industries.
- viii. The EFS&T Department, the then Government of A.P. issued a GO Rt.No.286, dated 05.07.1999, to transport the effluents to CETPs between 6 AM to 6 PM only and also to confiscate and penalize the tanker and transport companies indulging in illegal movement of effluent tankers operating without proper manifest forms. The SPCB had formed night surveillance teams to check the illegal dumping of effluents and hazardous waste and to check the illegal movement of effluent tankers.

11. Constitution of Local Committee:

The CPCB vide letter dated 07.03.2011, requested the APPCB to constitute a Local Committee comprising of various stake holders and experts to carry out bi-monthly review of the implementation of action plans of critically polluted areas. The committee is regularly meeting on bi-monthly basis and so far fourteen meetings have been held and reviewed the implementation of action plan. The Committee observed that, though the discharge of industrial effluent into Nakkavagu is controlled, the domestic waste water from M/s. BHEL STP and other small colonies in and around Patancheru are discharging their domestic waste water into Isakavagu which is ultimately joining Nakkavagu.

As per the CPCB directions, the Board has also constituted a “**State Level Committee**” with Chief Secretary as the Chairman of the committee on 25.02.2015 for effective implementation of the Action plans prepared by the Board. **So far no meetings of the committee have been conducted.**

12. Other observations / Recommendations:

1. Industries have installed the VOC meters which measures the VOC in ppm. It is suggested that the same should be in ppb to get the correct measurements.
2. IDA Bollaram is not an approved industrial area. The local Panchayat is not giving proper attention on the upkeep of the area with the result the hygienic condition in the IDA was found very bad. Domestic wastes are found disposed on the road sides and in open areas. Road condition is also very bad and is observed to be one of the major contributor of air pollution. Drains though are constructed but not maintained properly. It is recommended that state government should take steps to approve the IDA and to

constitute a local authority of IDA i.e., “Industrial Area Local Authority”, on par with the other Government developed Industrial Areas under the control of T.State Industrial Infrastructure Corporation.

3. Cameras installed in the industrial units, are mainly focused to cover the flow meters at the outlet. More number of cameras needs to be installed at all the strategic locations to cover the entire operations of the industry.
4. A periodical health survey needs to be carried out by the reputed institute.
5. Water requirement of the industries in this area is met from the Industrial Infrastructural Corporation or through water tankers supplied from private agencies. Agencies supplying the ground water need to obtain permission of the Ground Water Board and submit details to the industries for records.
6. CAAQM stations needs to be set up properly based on the most probable wind directions. One CAAQM station as proposed earlier is required to be provided at appropriate place in Bollaram by SPSCB. Monitoring should conform to the CPCB guidelines.
7. Monitoring of noise levels within the industries and adjacent villages and fugitive emissions in the industry is to be carried out.
8. A thorough study has to be carried out to find out the illegal discharge of industrial effluents in to the Asanikunta Tank from Bollaram IDA and action initiated against the culprits.
9. As understood from the SPCB officers some of the committee members of the Local C\committee constituted earlier have resigned, hence new committee need to be reconstituted. While reconstituting officers from Regional Office, MoEFCC, Chennai and Zonal Office, CPCB, Bangalore shall also be included as members.
10. Action plan needs to be worked out to reuse the treated effluent from PETL for various industrial and plantation purposes to reduce the discharge in the surface water bodies and conserve the use of fresh water.
11. On the orders of the Board M/s. NGRI has conducted a detail study on the assessment of origin of seepages in the Khazipally/Goddapotharam industrial area and submitted report to the Board and the findings are that the Ground Penetrating Radar (GPR) investigations does not show any Celestine pipeline deposits from the industries studied. The remedial measures suggested are avoiding any stagnation of water in the industry premises. Drain to be repaired with standard building materials, seepage

portion in the drain may be plugged with cement etc. Meeting was conducted and issued directions to industries and the Model Industrial Association of IDA, Gaddapotharam/ Khazipally. The team recommends similar study for IDA Patancheru-Bollaram.

12. The action plan prepared mainly covers the issues of Pharma industries and the domestic waste water. The industrial area of Patancheru - Bollaram also houses other industries like Steel Plants, Cement Ready Mix Plants, granite cutting and polishing units etc which are substantially contributing to the pollution in the area. During the visit, two steel industries, Shalini Steels and Vijay Iron Foundry Ltd. were inspected and found that the pollution control and safety aspects are totally neglected. In the Shalini Steels the stack was in very bad condition and no proper provisions exist to monitor. The Granite units are dumping their cutting and polishing wastes along road sides and near Asanikunta Tank. Many stone quarries are also located near the (IDA). They along with the heavy traffic on ring road is also adding to the pollution in the area. The dumping of Municipal Solid Wastes and their burning is yet another source of pollution in the area.
13. Due to active surveillance and monitoring of the industries in the Patancheru-Bollaram cluster areas by the Board, there is an improvement in Environment quality .Though the moratorium has helped to improve the status of environmental conditions in the IDA, it is restricted only to those industries which requires Environmental Clearance (EC). However, the other category of industries not requiring Environmental Clearance kept growing adding to pollution load. It is hence suggested that considering all such developments including the population growth a comprehensive action plan needs to be prepared and implemented. Until that it is suggested to continue with the moratorium extending its scope to the domestic activities in and around the industrial area.

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