



ENVIS CENTRE, CHANDIGARH

NewsLetter

P a r y a v a r a n - P a t r a

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Chandigarh State of Environment



EDITORIAL

THE ENVIRONMENTAL HEALTH : CHANDIGARH (VOL: II)

“Cities are the growth engines of the future, offering their populations greater opportunities for education, employment and prosperity. Yet, the negative effects of their growth can also result in traffic congestion, informal settlements, urban sprawl, environmental pollution, exploitation of resources and a significant contribution to climate change. Efficient and intelligent technology holds the answer to many of these urban challenges.”

Significant as a symbol of a developing, progressive and free India; Chandigarh is pragmatic mix of the functional and the aesthetic romanticism blended with practicality. The wide tree lined roads, managed gardens, unique architecture, greenery, the Rock Garden, Sukhna lake and its citizens; all together merge to characterize a city of the future, with no baggage of the past.

This newsletter is the second in series to describe the present environmental scenarios of City Beautiful, Chandigarh covering environmental factor and their status.



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ENVIS CENTRE
Deptt. of Environment
Chandigarh

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E-mail : ch@envis.nic.in
Web : www.chandigarhenvis.gov.in



Waste Management

- The concept of waste management was started with the construction of a unique “Rock Garden” in 1957 (totally from solid waste materials) by Mr. Nek Chand
- Chandigarh is generating average 427.09 tons of solid waste everyday and leading towards a zero waste city with total collection and disposal of 97% waste per day by a number of effective ways.



Waste Collection & Segregation at Sehaj Safai Kendras:

- To reduce volume of waste for disposal on land fill site and utilize organic, reusable and recyclable waste, Chandigarh Administration and Municipal Corporation, have initiated a project 'SAHYOG'.
- This project envisages the conversion of waste to wealth.
- Nearly 3,420 workers engaged in waste collection and the segregation of waste is performed regularly at 36 units of Sehaj Safai Kendras (S.S.K.) and Khad Banao Kendras (K.B.K.), which are established at various locations in the sectors of the city.
- For promoting source segregation, Chandigarh MC and Administration has been distributing Color Coded Dustbins to all houses of U.T.

Converting Waste to Energy: Municipal Solid Waste Processing Plant

- ✍ A “**Garbage Processing Unit**” has been setup based on **German technology** over the land area of **10 Hectares** provided by the administration, situated in the west of Sector 25, Chandigarh.
- ✍ The plant converts the combustible part of solid waste (**270 tons/day**) into high quality **Refuse Derived Fuel (RDF)** with low moisture content and a calorific value of more than **3100 kcal/kg**.
- ✍ The manufactured RDF is being used for energy recovery in power plants and cement kilns.






Current Scenario of Waste Management

Though, waste generation in Chandigarh is increasing year after year, but the goal of zero waste city seems far to be achieved. There are many reasons behind it, such as:

- ✍ The closure of Jaypee waste processing Plant for certain span of time





-  Inefficient collection and treatment of segregated waste. Though, colored bins were distributed throughout the city but improper collection of waste leads to the failure of project.
-  Improper functioning of Sehaj Safai Kendras that are supposed to work as a prime channel of waste segregation in the city.
-  The composting unit of Jaypee plant is running under capacity due to the non-availability of segregated organic waste.





Future Prospective




1) At Sector Level:

-  To encourage public-private alliance between the local bodies, NGO's, RWA's and CBO's for managing Solid Waste at neighbourhood level.
-  Bio-sanitizing, composting, vermin-composting, composting with bio-culture methods are also the suggested methods.





2) At Society Level:

-  Taking 2.6 kg of waste per household for a family of 4 persons, a secondary storage space at community level has to be provided for treating recycling and collection by the Municipal Corporation
-  The enclosure for the communal storage has to be at least 2 m high with provision for washing down and draining the floor into a system suitable for treating the polluting effluents.


3) Biodegradable waste:

-  The biodegradable part of the waste shall be treated in a common treatment plant. An area of **1.2m x 1.2m** in new buildings will be planned which should be sufficient to provide storage of waste containers for all category/types.
-  All market waste (coming from fish/slaughterhouses/vegetable/fruit/flower markets) should have arrangements for composting of the organic waste.
-  All hotels and restaurants should have in-house arrangements for treating biodegradable waste.

4) Construction and Demolition Waste:

-  In case of demolition projects, a minimum of **20%** of the existing structure (walls, roofs and floors, windows, doors, etc. excluding the hazardous materials) if reused shall be given incentive/rebate.
-  A minimum of 20% of the construction waste generated should be reused/recycled.
-  A minimum of 4% of the total site area should be allocated for storage of the waste.
-  A document with the confirming the contents of wastage need to be submitted to the concerned authority along with plan approval documents.

5) Audit Report of Commercial Buildings:

-  It is proposed that an annual waste audit report should be made mandatory for all commercial, Offices, Restaurants, Hotels, Educational Institutions etc., to be submitted to the MOH/ Municipal Corporation.

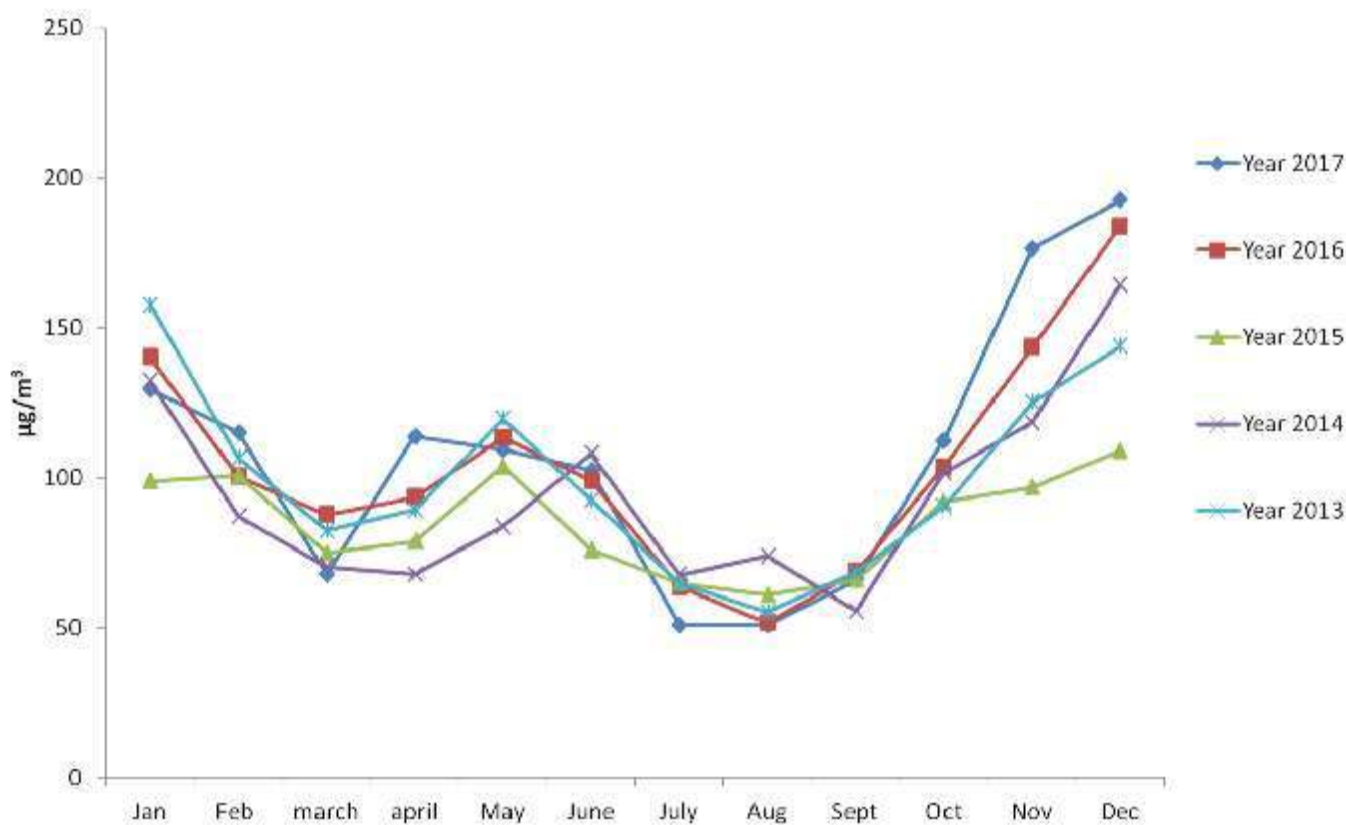
Air Quality of Chandigarh

- Due to the well managed traffic system, strictly followed speed limits, dense tree cover around all roads, high green area, and regular industrial check-ups; **the air quality of Chandigarh is much healthier than most of the growing cities of India.**
- The SO_2 & NO_2 levels of the city always lie below the permissible limits given by the “National Ambient Air Quality Standards – 2009” of India (MPL SO_2 -50 $\mu\text{g}/\text{m}^3$ & NO_2 -50 $\mu\text{g}/\text{m}^3$).
- However, **the RSPM level** has been observed above permissible limits in the city.

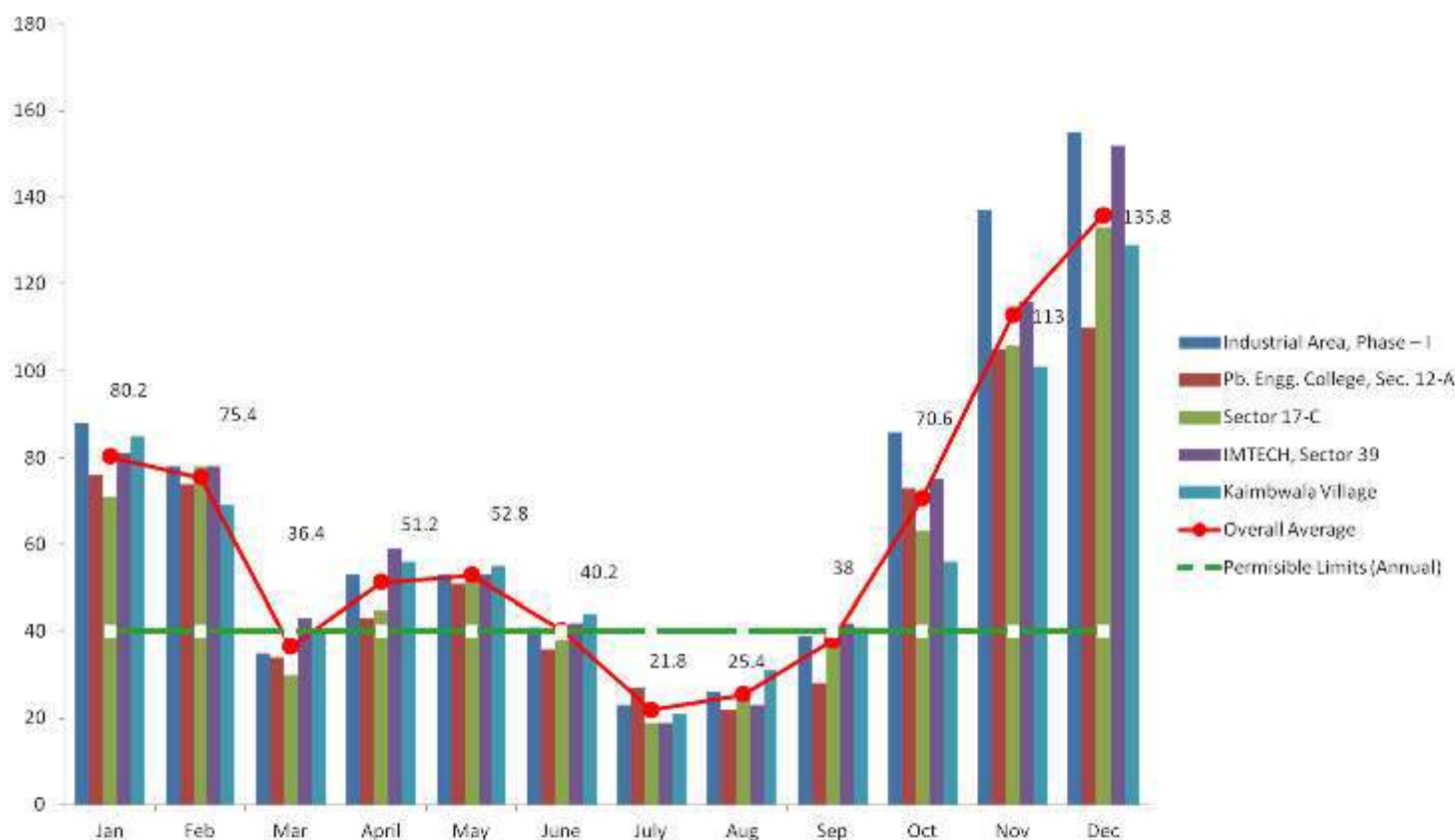
The annual average **RSPM** level observed for the year 2017 was **107 $\mu\text{g}/\text{m}^3$** , whereas that of **PM 2.5** was **61.7 $\mu\text{g}/\text{m}^3$** which is quite higher than the desired limit of 60 $\mu\text{g}/\text{m}^3$.

Graph Representing Monthly Average RSPM : Last 5 Yrs

RSPM tends to increase in the period of **April to June** in summers and **October to January** in winters regularly. However, during rest of the months the RSPM level lies nearby the permissible limits.



PM 2.5 (Year 2017)



Possible Reasons for the observed trend:

Population & Vehicle density:

- As per the census 2011, total population of city has crossed the mark of 10.5 Lakh, with the population density as high as **9252 persons per sq. Km.**
- The city also has the **largest density of vehicles (878 vehicles/1000 people)** also, which can be the main contributors to the RSPM level., but the BDL of NO_x put the reason doubtful.

Location of the city & industrial surroundings:

- Chandigarh is surrounded by the **Industrial cities** such as Baddi (HP), Mohali, Zirakpur, Derabassi (PB) and Panchkula (HR). Chandigarh too has a vast number of Industrial setups.
- As observed, the RSPM level of these cities is usually remains higher than that of the Chandigarh; therefore it can contribute to the RSPM of the city.
- RSPM levels in air also increases due to the **operation season of brick kilns (Oct – May)** and **sugar mills (Oct - March)** located at the surroundings of Chandigarh. Their continuous exhaust releases enormous amounts of SPM/RSPM, which can travel tens of kilometres to the nearby areas.

Temperature Effect:

Winters:

- Rising RSPM levels during winters can be due to the trapping of pollutant by denser air and settling down due to the phenomenon of “**Inversions**”.



Summers:

- In hot days the vehicular emission also increases due to the **air conditioner load**.
- However in the rest of the period the low RSPM is controlled by the rainfall (**monsoon/western disturbances**) and spreading due to heated air masses & wind speed.

Human Activities:

- High RSPM levels in the months of winter may also be attributed to the **shooting of fire crackers** due to number of festivals like Diwali (**Nearly Rs. 10 Crores**), Guruparav and New Year eves; moreover it's the season when most of the marriages happen in the north region.
- Falling of leaves and their illegal burning** in autumn season i.e November to January (winters) is also one of the main reason behind high RSPM in winters as green leaves exhibits a ultimate property of adsorbing the suspended particulates and purifying air.

Crop Harvesting Seasons:

- Located nearby the agricultural hubs (Punjab/Haryana), city received a lot RSPM from the wheat harvesting, stubble burning and field ploughing/preparation for the next crop during summers (**April - June**); whereas the repetition same activities activities for rice cultivation takes place during winters (**Oct-Nov**).

Effect of Pollens

- Plants and Trees used to propagate their seeds through air by the process of Pollination. Almost all the flowering plants distribute their seeds through air to the nearby area. In the process, as the size of these pollens lie within the limits of RSPM (less than 10 μm) therefore pollens counts for the major part in the RSPM level of any city. Chandigarh, a green city, also has very high density planted series of different trees consisting a major fraction of flowering trees.

Waste Water Treatment:

Chandigarh is fully covered with sewerage facility and provided with the 100% sewerage treatment facility. Out of 87 MGD water being supplied to the residents of the city, 57 MGD sewage effluent is being generated per day. Out of which, average 53.85 MGD waste water is treated everyday.

Use of treated waste water:

- Chandigarh is generating nearly **57 MGD (Million Gallons/Day)** waste water from domestic and industrial processes.
- More than **94% (53.85 MLD)** waste water is been treated efficiently on daily basis, with the help of **5 STP (sewage treatment plants)** based on latest technology.
- To achieve the target of **0% waste water** two additional STP are under progress for an additional capacity of **16.7 MGD** (more than the total waste water generated).
- Out of the **total tertiary treated waste water** currently **10 MGD** is been used for irrigation of lawns & open spaces of the city; whereas work is in full swing for additional **20 MGD** to achieve the target of covering all green spaces of the city with a supply of 30 MGD.
- The balance amount of treated waste water (43 MGD approx.) after meeting the required norms is allowed to discharge into the natural streams to overcome the water pollution load.

Municipal Population	10.54 Lacs
Volume of Domestic & Industrial Waste Water Generated	57 MGD (Approx.)
Treated waste water	53.85 MGD
No. of STPs	5
Capacity of Each STP	16 MGD – 3 BRD
	5 MGD – Raipur Kalan
	30 MGD – Diggian
	1.25 MGD – Raipur Khurd
	1.6 MGD – Dhanas
	Total : 53.85 MGD
Proposed STPs	1.7 MGD at Khuda-ali-sheer.
	15 MGD is under renovation at
	Diggian, Mohali.
	Total: 16.7 MGD
Mode of Disposal	Natural Choe for all except Diggian. Diggian STP effluent goes to Irrigation Channel



Dear Information Seeker,

ENVIS CENTRE, Chandigarh furnishes you with the services to collect and disseminate information related to environment of Chandigarh. To share information with us you are requested to fill up the form given below.



Your feedback is valuable to us and will be highly appreciated

- Name _____
- Designation _____
- Department _____
- Address _____
- _____ City _____
- State _____ Country _____ Pin _____
- Phone _____ Fax _____
- Email _____

Your views on scope of improvement :

- Interest Area _____

I would like to have information on following :



**ENVIS CENTRE TEAM**

Sh. Santosh Kumar, IFS
(Director, Environment)

Sh. P.J.S Dadhwal
(Project Coordinator)

Er. Mohit Badhwar
(Programme Officer)

Dr. Abhishek Sraw
(Information Officer)

Sh. Surinder Sharma
(I.T. Cum Data Assistant)

Action Plan for Water Conservation: U.T. Chandigarh

- ✍ As per new guidelines by the CPCB, the BOD of treated waste water should be below 10 mg/L, thus the up-gradation of all STP's in the city is under process.
- ✍ Supply of tertiary treated water is planned to increase from 10 MLD to 30 MLD for the use in sectoral garden, parks, household lawns etc.
- ✍ All the large developments, housing and institutional campuses etc. with a total site area >30 acres must adhere to Zero storm water runoff from the site.
- ✍ Use of recycled water will be compulsory for all non-potable uses for all large buildings with an area of more than 2000 m² in all new developments.
- ✍ All apartments with more than 20 tenements or area of more than 2000 m² should make plumbing and infrastructure provision for enabling localized sewage treatment, use of recycled water for flushing, washing and for watering gardens.

Sr. No.	Category of interventions	Proposed activities	Remarks
1	Reduce Water consumption	Water efficient fixtures are being fitted in all new buildings.	All new buildings are being fitted with water efficient fixtures and water less urinals, resulting into reduction of 15% of the water consumption.
		Leakage Control Management	An agency is being decided from the Empanelled agency of MoUD to study the non revenue water, however strict monitoring results in leakage control in the tune of 5%.
		Replacement of malfunctioning water meters	It has been notified in the Chandigarh Water Supply Bye Laws that all the malfunctioning water meters shall be replaced by the consumers from their own otherwise the penal rate will be charged from water chares which is being strictly followed resulting 80% of the malfunctioning water meters replaced.
2	Landscape water conservation	Use partially treated water for irrigation	Tertiary Treated water network has been provided and it has been mandatory for all the residential houses above 1 kanal to have T.T connection for irrigation purpose all the green belts/parks are being irrigated with T.T. water and the work is in progress to cover the entire city within next 3 months.
3	Water Audit		EESL has been engaged for the water audit and survey work is in progress.

From:

ENVIS Centre
Department of Environment
Chandigarh Administration
3rd Floor, Paryavaran Bhawan,
Madhya Marg
Sector 19B,
Chandigarh - 160019

Ph. No: 0172-2700065, 0172-2770998

Email: ch@envis.nic.in

Website: www.chandigarhenvis.gov.in

To,

Note : While every care has been taken in compilation of the information available for this newsletter. However, readers must make thorough confirmation/enquiries at their own level before acting upon any data/information provided to the readers. Any discrepancy brought in the notice of ENVIS CENTRE, Chandigarh will be highly appreciated.