ENVIS CENTRE, CHANDIGARH
NewsLetter
Paryavaran - Patra
ISSN NO. 0974-7087

Chandigarh State of Environment

EDITORIAL

STATUS OF AIR QUALITY, CHANDIGARH

With the increase in population and the industrialization of the city, the problem of air pollution has also been arising. Due to high per capita income, the city beautiful is among the highest vehicular density areas of the country. Due to daily inflow of commuters from the three adjoining states (Haryana, Punjab & Himachal Pradesh), and the visitors load for centrally located PGIMER (Post Graduate Institute of Medical Education & Research); Chandigarh experiences very heavy traffic load daily. Also as the name indicates, city beautiful is densely occupied with a variety of seasonal, flowering, ornamental and fruit yielding trees. All these factors contribute through their own way towards the gaseous pollutants and suspended particulate loads in the air by means of releasing SO_2, NO_2, smoke, carbon particles and pollens.

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 $\mu g/m^3$ & NO_2-50 $\mu g/m^3$). However, the RSPM (PM_{10}) level has been observed above permissible limits in the city. The average RSPM level observed for the last year i.e. 2014 was 105 $\mu g/m^3$, which is quite higher than the desired limit of 60 $\mu g/m^3$. Therefore, there is a need to find out the culprit facts and to plan out strategy for their effective eradication.

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(VOLUME 9.1.2)
Oct 2014 - Dec 2014
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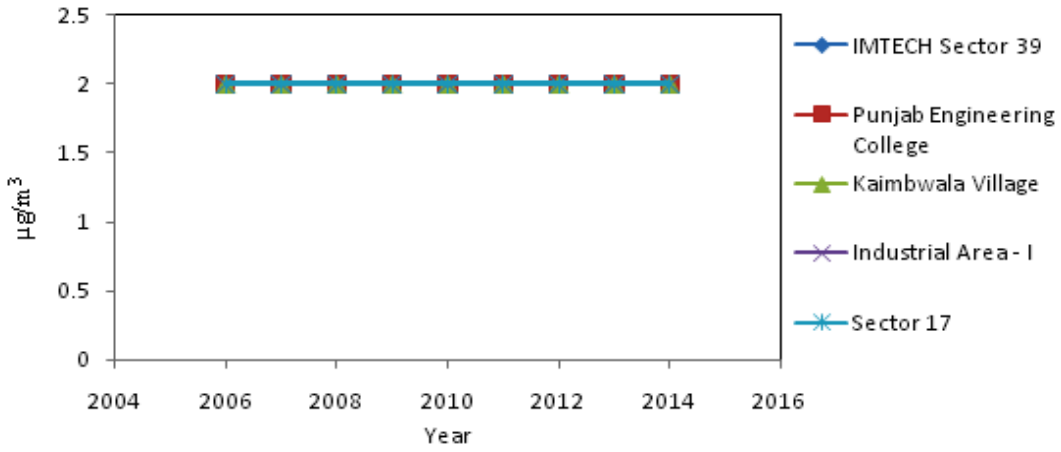
1. Trends of SO_2 in Chandigarh:



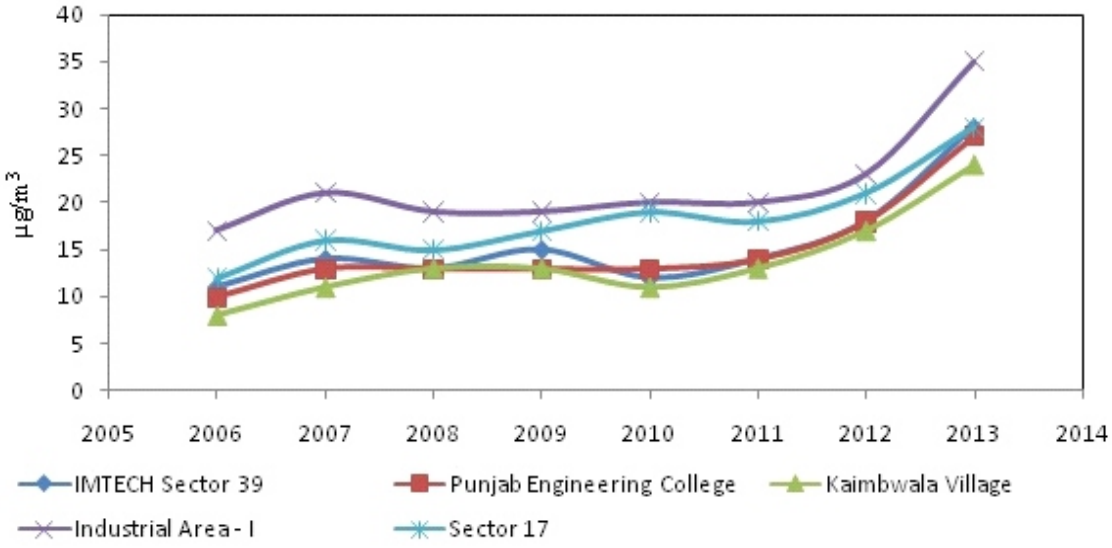
Source: Member secretary CPCC, Chandigarh

Observations:

Oxides of sulphur are usually produced by the burning of sulphur or materials that contain sulphur. The main source of sulphur dioxide in the air is industrial activity that processes materials containing sulphur as a constituent, e.g. the generation of electricity from coal, oil or gas that contains sulphur. SO_2 also reacts with other chemicals in the air to form tiny sulphate particles, contributing to levels of particulate matter. The atmosphere of city beautiful is very clear as far as the concentration of SO_2 is concerned. The SO_2 levels in the air of Chandigarh are observed to lie below the detectable limits therefore assigned a constant value "2" for the ease of data management. The above graph shows the controlled level SO_2 in the city since year 2006.

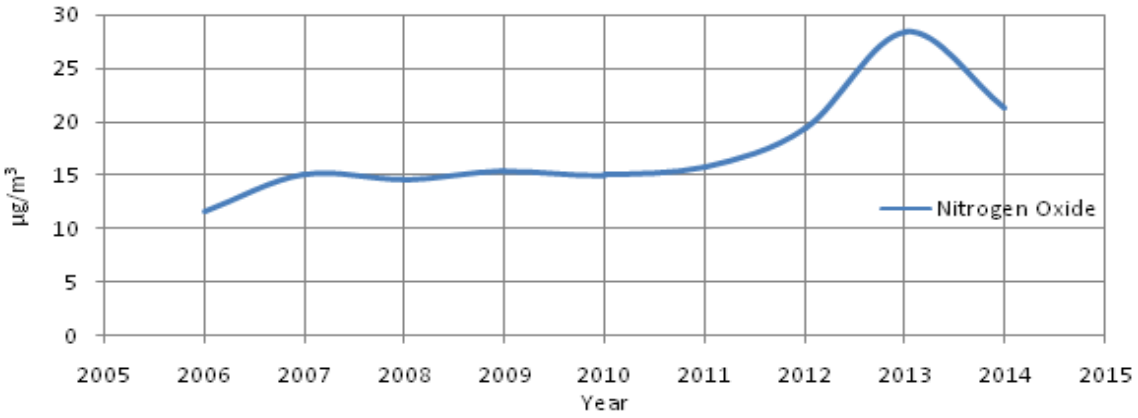
2. Trends of NO_2 in Chandigarh:

✶ Monthly average of NO_2 in Chandigarh:



Source: Member secretary CPCC, Chandigarh

✶ **Yearly average of NO_2 in Chandigarh:**



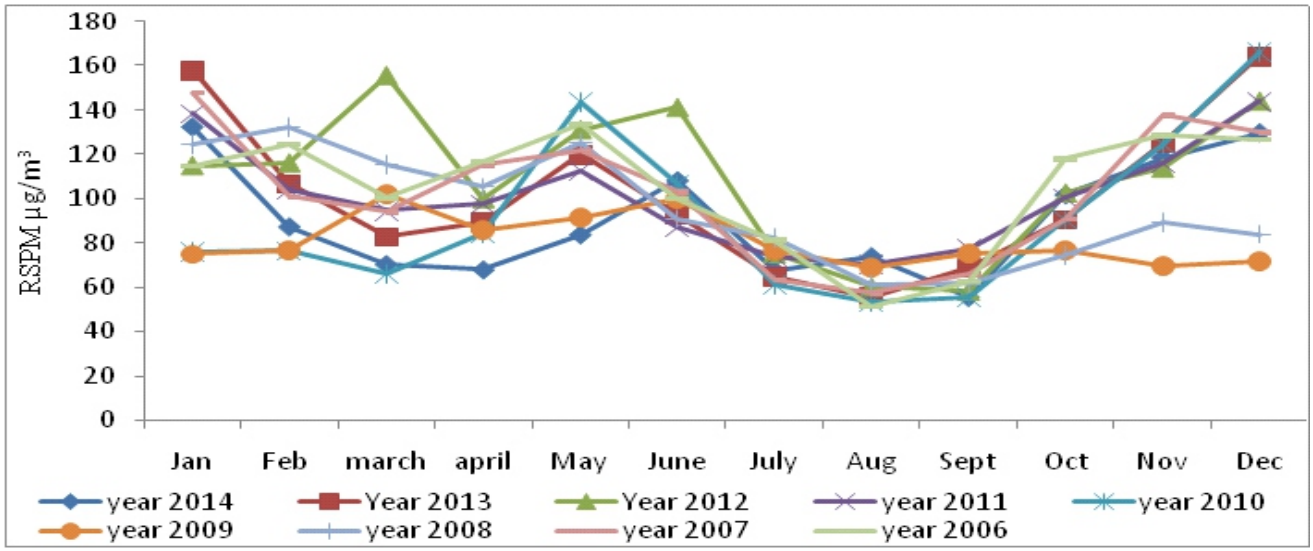
Source: Member secretary CPCC, Chandigarh

Observations:

The above graphs show the trends of NO_2 in Chandigarh varying with the point of monitoring and their average values per year since 2006. The NO_2 level is also very much controlled in the city as it always lies below the permissible limits (MPL for NO_2 – 40 µg/m^3) decided under National Ambient Air Quality Standards of India- 2009. The average value of NO_2 in the city is recorded to be 17.38 µg/m^3; however, due to increasing vehicular density in the city the levels of NO_2 are increasing year by year, mainly since 2010. Comparatively higher concentrations were observed at Industrial area and the monitoring point located at Sec 17, due to frequent movement of heavy vehicles.

3. Trends of RSPM in Chandigarh:

✶ **Combined Graph: Monthly average of RSPM Chandigarh in last 9 years**



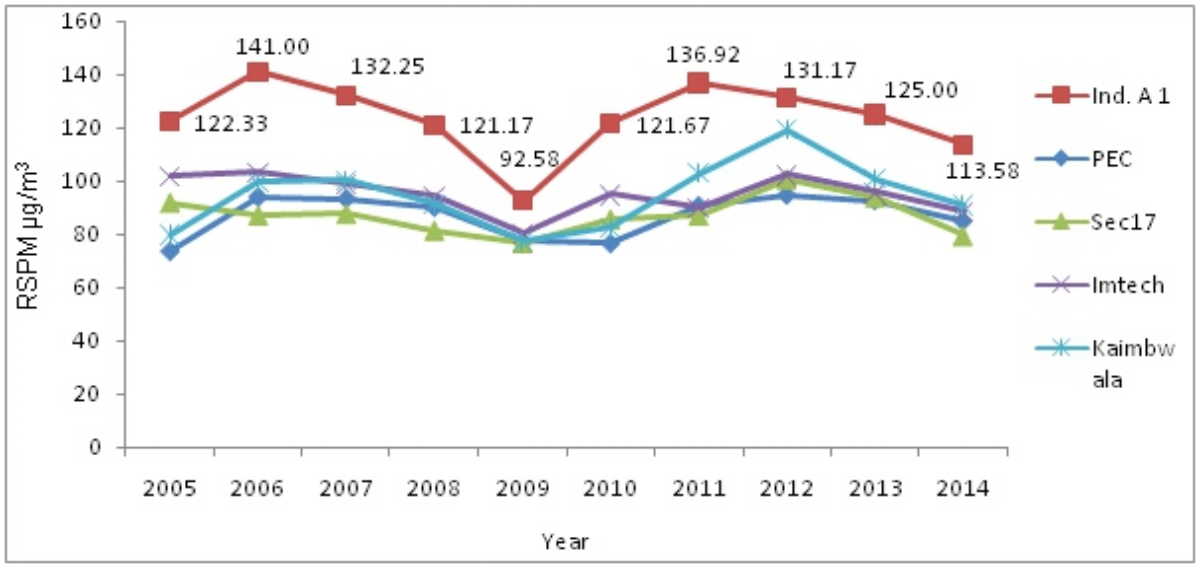
Source: Member secretary CPCC, Chandigarh

Observations:

The above graphs clearly show the variations in the trend of RSPM levels in the city, changing with the seasons throughout a year. The level of RSPM was observed to follow the same trend every year, in last decade.

The levels of **RSPM** in the air of Chandigarh were observed to **increase** with the decrease in temperature, from **October to January (winter season)**.
Further the **RSPM** count start **decreasing** with the temperature rise from **February to April.**
Again the **high RSPM** count was observed in the months of **May –June** (crop harvesting season)
During the Monsoonal months, **July – September,** the **RSPM level** remains to the **lower limits** due to the rainfall activities.

✶ Yearly average of RSPM at Chandigarh (Monitoring point wise)



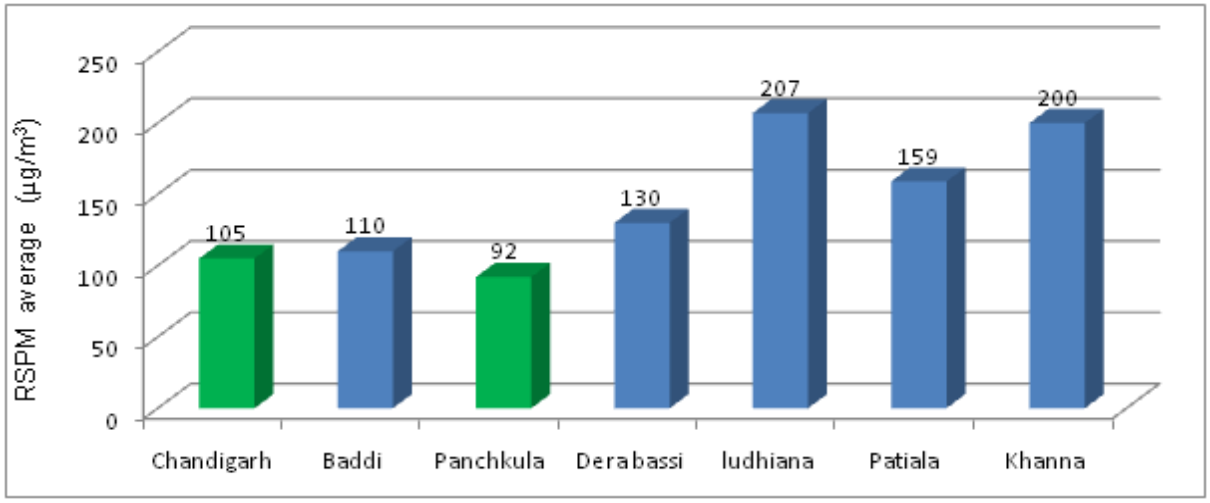
Source: Member secretary CPCC, Chandigarh

Observations:

RSPM monitoring in Chandigarh has been performed at five different locations i.e. Industrial area Phase 1, Punjab Engineering College (University of Technology) Sec 11, Commercial complex Sec 17, IMTECH Sec 39 and a village named Kaimbwala.

Due to high industrial and heavy vehicular activities, **highest RSPM levels** were observed at the monitoring point located at **Industrial Area Phase 1 (123.76 avg. / 10 yr)** followed by **IMTECH Sec 39 (94.89 avg. /10 yr)**, Chandigarh.
The lowest RSPM level in the city was observed for the Punjab Engineering College (University of Technology) Sec 11 **(86.8 avg. /10 yr).**

✶ **Comparison with the neighbouring cities of Chandigarh: (average 2014)**

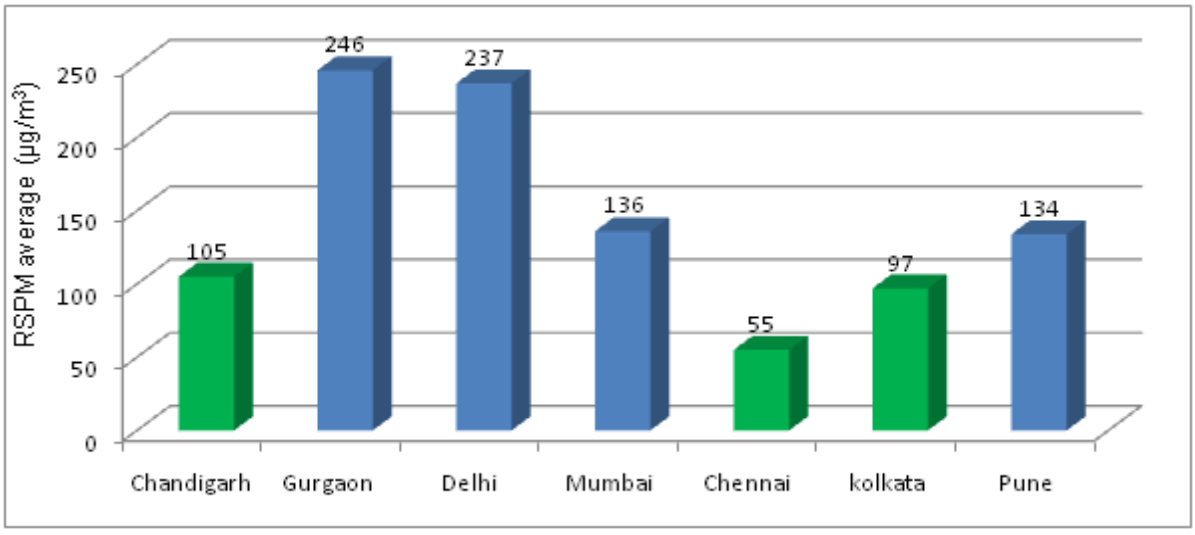


Source: Member secretary CPCC, Chandigarh; HPCB (Haryana); HPSPCB (Himachal Pradesh; www.nubeo.com (WHO); CPCB ENVIS (Delhi).

Observations:

Though the average RSPM level of Chandigarh is quite higher (**105 µg/m^3**) than the permissible limits (**Annual Avg. 60 µg/m^3**) given by ***National Ambient Air Quality Standards of India.*** But the air of Chandigarh is still in much better conditions as compared to its neighbouring cities. Highly polluted neighbourhood always contributes a lot towards the pollutant levels of city.

✶ **Comparison with the major cities of India: (average 2014)**



Source: Member secretary CPCC, Chandigarh; HPCB (Haryana); www.nubeo.com (WHO); CPCB ENVIS (Delhi).

Observations:

The comparison of the RSPM level of Chandigarh with the major cities of India shows that only the coastal cities such as **Chennai & Kolkata** has the Annual RSPM level **lower** than that of Chandigarh, whereas the remaining shows very high inclination.

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Possible Reasons behind the high RSPM levels:

1. ***Population & Vehicle density:***

The population density during the last 5 decades (1961-2011) has increased 9 fold, from 1051 to 9252 persons per sq. Km. Due to high economic status; the city has the largest density of vehicles (878 vehicles/1000 people); which is one of the main contributors to the RSPM level. Frequent braking, idling at light points, unmanaged diesel auto rickshaw and buses also adding up to the problem.

2. 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 maily during summers (April - June); whereas the repetition of same activities for rice cultivation takes place during winters (Oct-Nov).

3. Effect of Pollens:

Plants and Trees (mainly flowering trees) used to propagate their seeds through air by the process of Pollination. 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.

4. Temperature Effect:

Increasing RSPM levels during the winters is attributed to the low temperature because when temperature declines, the air masses gets denser and settle down causing the phenomenon of "**Inversion**". The dense air leads to the increased concentration of the trapped pollutants by restricting their atmospheric dispersal.

5. Location of the city & Industrial surroundings:

Chandigarh is surrounded by a number of Industrial cities such as Baddi, Mohali, Zirakpur, Derabassi and Panchkula etc, that are higher in RSPM levels. Chandigarh itself has two industrial areas setup around. Also, a number of highly polluting brick kilns are established and operating around the vicinity of the city. Due to air born moment of the pollutants, they may add up to the RSPM level of the city.

6. Transportation Load in the city:

Heavy rush of people used to travel daily to the city from adjoining Haryana, Himachal and Punjab through the entering points of Zirakpur, Panchkula, Mullanpur, and Mohali. As per the information obtained from the RLA department, Chandigarh; more than 3,18,000 four wheelers, 4494 buses, 8243 goods vehicle and more than 6,05,800 two wheelers were registered with the city till year 2013. As per the national summary report 2010 (CPCB) the total contribution of vehicular exhaust of any city adds up 15 – 70% of the total PM_{10} level, depending upon the density of vehicles and weather conditions, out of which the main contributors (56%) are diesel vehicles including buses, trucks and auto-rickshaws.

7. Human Activities:

Irresponsible human activities such as shooting of excessive fire crackers during festive seasons (Nearly Rs. 10 Cr./year), burning leaves, stubble, and waste materials are also the undirect factors contributing RSPM of a city.

Feedback Form

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 :

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ENVIS CENTRE, CHANDIGARH
Newsletter
Paryavaran-Patra

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(Information Officer)

Mr. Surinder Sharma
(I.T. Assistant)

Steps required to control particulate pollution ($RSPM_{10}$):

- Control over Diesel locomotives
- Control over Pollinating Vegetation
- Control over highly polluting Industries
- Sensitisation of the nearby Industrial states

Responsibilities of a good citizen:

- Use public transport as much as possible instead of private vehicle
- Avoid unnecessary fuel burning on red-lights
- Try to maintain your vehicle and go for regular servicing
- Prefer bicycle or a healthy walk for short distances
- Do not practise and allow burning waste or leaves anywhere
- Complaints against the violators can be filed in the office of Medical Officer of Health, Municipal Corporation, Chandigarh or at Toll free No. 155304

Public Awareness Campaigns:

Time to time initiation of effective awareness programmes for the city residents, school children, colleges/university students, industrialists, municipal workers and farmers should be done, to aware them against the detrimental consequences of burning fire crackers, waste leaves, waste paper & plastics, and stubble burning etc. by using different means such as:

- Printed materials such as newsletters, magazines, pamphlets etc
- Organising Mob shows, theatre plays
- Seminars and workshops

Industrialists should also make aware about the health implications and environmental losses caused by the polluted emissions of their units.

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To,

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