

## Air Quality Assessment

### 2.1 National Air Quality Monitoring Programme (NAMP)

Central Pollution Control Board conducts ambient air quality monitoring under the nation-wide National Air Quality Monitoring Programme (NAMP) comprising of 346 stations covering 127 cities / towns in 26 States and 4 Union Territories. The objectives of the NAMP are:

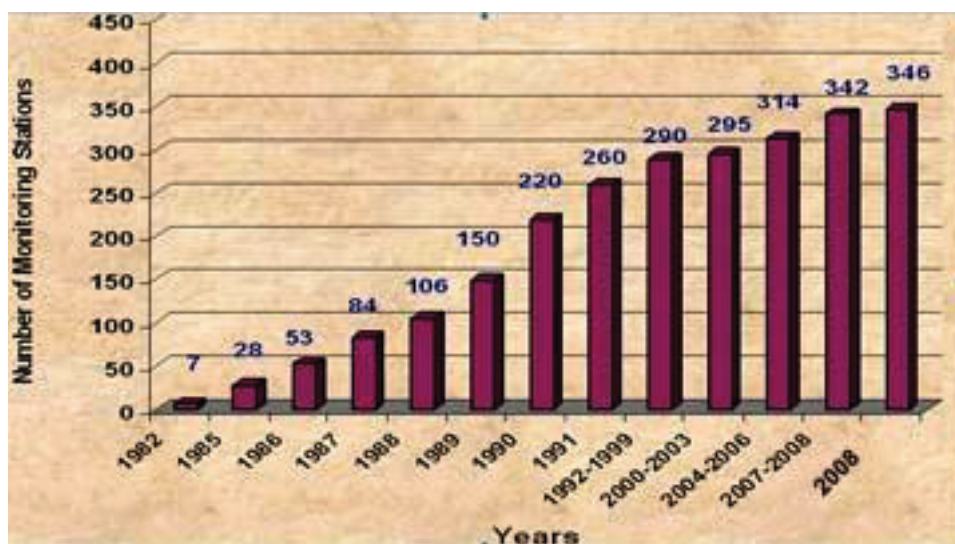
- ✓ to determine status and trends of ambient air quality;
- ✓ to ascertain whether the prescribed ambient air quality standards are violated
- ✓ to identify non-attainment cities and ;
- ✓ to obtain the knowledge and understanding necessary for developing preventive and corrective measures.

Under NAMP, four criteria air pollutants have been taken up for monitoring at all the locations:

- Sulphur Dioxide (SO<sub>2</sub>),
- Nitrogen Dioxide (NO<sub>2</sub>),
- Suspended Particulate Matter (SPM) and
- Respirable Suspended Particulate Matter (RSPM / PM<sub>10</sub>)

The monitoring of meteorological parameters such as wind speed, wind direction, relative humidity and temperature has also been integrated with the monitoring programme. The sampling of pollutants is carried out for 24 hours (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter) with twice a week frequency to have 104 observations in a year. The monitoring under the NAMP is being carried by Central Pollution Control Board through its Zonal Offices, State Pollution Control Boards and Pollution Control Committees and National Environmental Engineering Research Institute (NEERI), Nagpur.

CPCB co-ordinates with these agencies to ensure uniformity, consistency of air quality data besides providing technical and financial support to them for operating the monitoring stations. As the monitoring under the NAMP is being operated through various monitoring agencies employing large manpower needed to handle equipments for sampling, chemical analyses, data reporting etc, as a result some biases may sometimes be reflected in the air quality data, which is a limitation when reporting data.



**Figure: 2.1.1: Growth of Ambient Air Quality Monitoring Stations under NAMP**

## 2.2. Ambient Air Quality Trend at Tajmahal, Agra

CPCB has been regularly monitoring ambient air quality at Agra at four locations since year 2002. Ambient air quality data of Agra is also being submitted to Hon'ble Supreme Court of India under Writ Petition (C) No. 13381/1984 M.C. Mehta Vs Union of India. Air Quality data generated from the monitoring stations at Tajmahal, Agra is also being done, the annual air quality trend from year 1991 to 2008 of four critical pollutants at Tajmahal is depicted below. There has been declining trend of SPM, RSPM remains stable (monitored since year 2002), steady decrease in SO<sub>2</sub> attributed to supply of ultra low sulphur diesel (0.005%) and initiation of other measures including ban on the use of coke / coal. No change in trend was observed could be due to increased number of CNG vehicles.

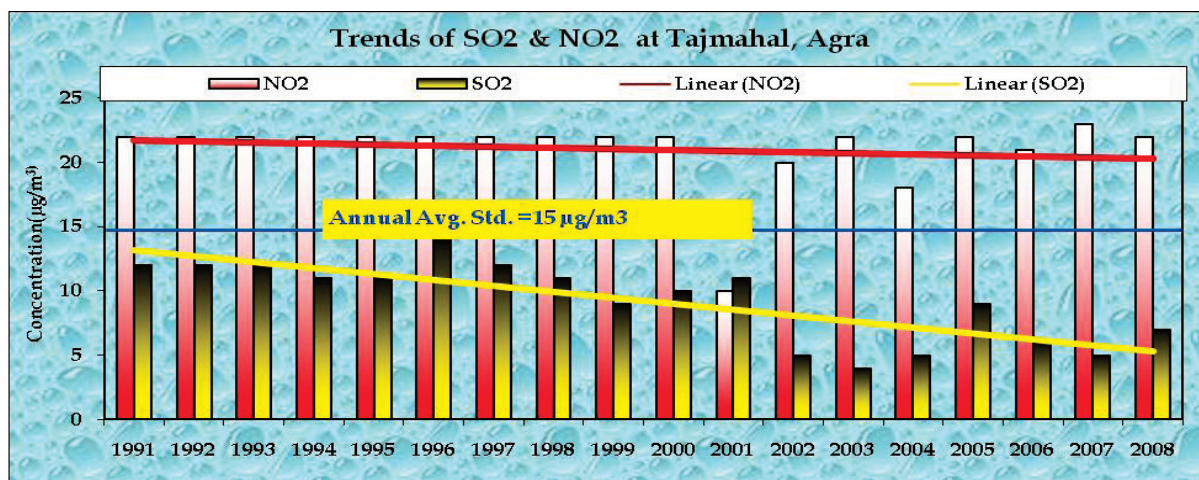


Figure: 2.2.1: Ambient Air Quality Trend at Tajmahal, Agra

## 2.3. Ambient Air Quality at Taj-Trapezium Zone (TTZ)

Taj-Trapezium Zone (TTZ) is one of the air pollution sensitive zones in the country the ambient air quality monitoring is being done in three districts of Uttar Pradesh viz. Agra (6 locations), Mathura (3 locations), Firozabad (total 3 locations) and in Bharatpur (3 locations) in Rajasthan. The monitoring has been carried out in pre and post winter months for three primary criteria pollutants (SPM, SO<sub>2</sub> and NO<sub>2</sub>) and also for organic soluble fraction in SPM. The Toluene soluble organic fraction (TSOF) largely represents organic fraction present in the ambient particulate matter. A study was undertaken at selected towns in Taj Trapezium Zone during December, 2008 to assess the level of TSF fraction in total suspended particulate matter

## 2.4. Ambient Air Quality Monitoring At Kanpur

CPCB is operating an ambient air quality monitoring station, located at Vikas Nagar, a residential area of Kanpur, for assessing the level of pollution in the city to formulate the control strategy.

## 2.5. Ambient Air Quality at Lucknow

Ambient air quality at Lucknow is regularly been carried out by CPCB, Zonal Office – Lucknow at Vikas Khand, Gomtinagar a residential area of city for criteria pollutants i.e. respirable particulate matter (RPM), oxide of nitrogen (NO<sub>x</sub>) and Sulphur-dioxide (SO<sub>2</sub>). The monitoring activities are continuous for all working days round the clock.

## 2.6. Ambient Air Quality at Kasba (Southend Conclave Building), Kolkata

Regular monitoring of ambient air quality is being undertaken in Kasba, Kolkata to provide data for daily national telecast. The study assesses the air quality parameters like RSPM, SO<sub>2</sub> and NO<sub>2</sub>. The permissible limit with respect to RSPM levels exceeded in January and

February, for NO<sub>2</sub> and Sulphur Dioxide the values were within norms. The increase in the RSPM level during the winter may be due to atmospheric inversion.

### 2.7. Ambient Air Quality Monitoring At Port Canning, West Bengal Bordering Bangladesh under Male Declaration

The Ambient Air quality monitoring station at Port Canning, West Bengal is under operation since September, 2004. One meteorological station is situated in the same campus. CPCB is regularly monitoring RSPM, NO<sub>2</sub> and SO<sub>2</sub> for at least ten days in a month. Analysis of the rainwater is also regularly being undertaken.

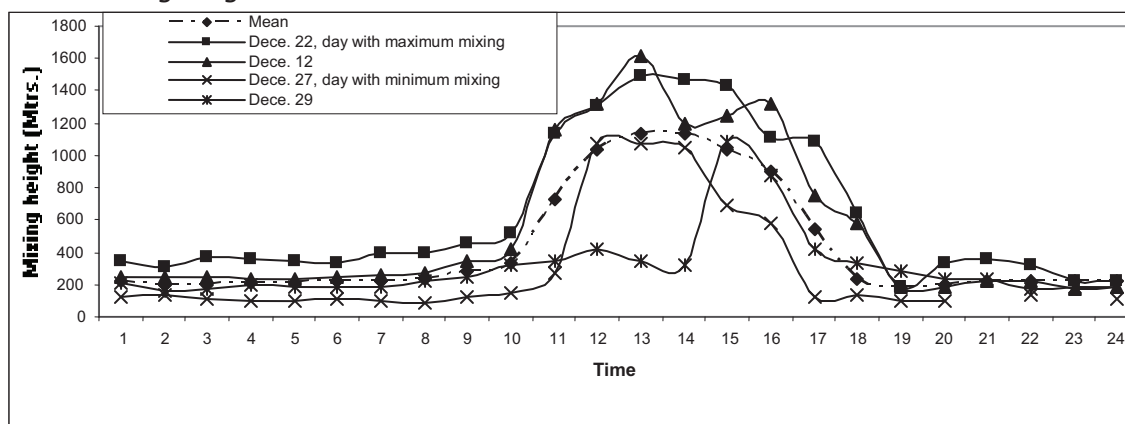
### 2.8. Atmospheric Mixing Depth (SODAR) Observations at Delhi

Sound Detection and Ranging System (SODAR) is in continuous operation at CPCB which measures the mixing height. The SODAR data collected in different months during 2008 is presented below

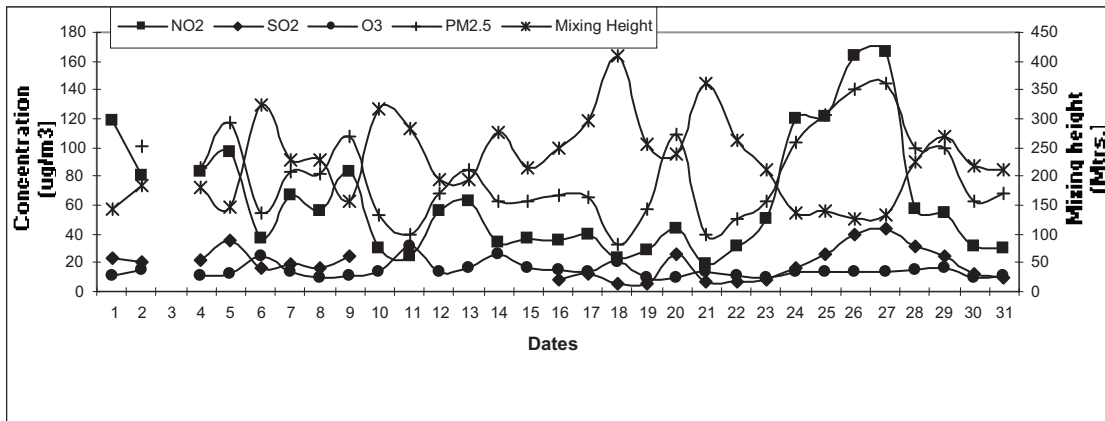
Months	Mostly occurring period of high convective activity during the month	Mean Mixing Height in the period of high convective activity	Mean Mixing Height in the period of low convective activity	Monthly Mean Mixing Height	Maximum Mixing Height*	Minimum Mixing Height*
June, 08	07 a.m. or 08 a.m. to 06 p.m. and 07 p.m.	971	144	534	1325	90
Sept, 08	07 a.m. and 08 a.m. to 06 p.m.	1056	191	554	1494	85
Dec', 08	10 a.m. or 11 a.m. to 04 p.m. and 05 p.m.	1031	229	426	1621	80

**Table: 2.8.1: SODAR results from Delhi 2008 (hourly average values)**

It can be observed that air pollutant concentration except Ozone was found increasing, when the mixing height was decreased.



**Figure: 2.8.2: Diurnal Variation in Mixing Height (December 2008)**



**Figure: 2.8.3: Variation in NO<sub>2</sub>, SO<sub>2</sub>, O<sub>3</sub> & PM<sub>2.5</sub> at Bahadur Shah Zafar Marg Intersection with Mixing Height During period of Low Convective Activity (Dec' 08)**

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