

ANNEXURE 5

Status of Ambient Air Quality of Tumakuru, Karnataka




CENTRAL POLLUTION CONTROL BOARD

Zonal Office (South)

Nisarga Bhavan, Thimmaiah Road

Shivnagar, Bengaluru - 560 079

1. ABOUT TUMAKURU CITY

State	Karnataka
Location	Latitude: 13.3400° N and Longitude: 77.1000° E
Area	48.6 Sq.km
Elevation	822 m (2697 ft)
Population	Around 305,821 according to 2011 census.
Geography	The name of the city is believed to have been mutated possibly from 'tumbe ooru' due to the abundance of Tumbe Huuvu, a kind of flower, or 'tamate ooru' due to the folk musical percussion instrument. Also it is called the coconut city. The cultivated products includes chiefly of coconut, millet, rice, pulses, arecanut and oil seeds.
Industries	Manufacture of coarse cotton cloth, woolen blankets, ropes, HMT watches, WIPRO,TVSE, SCII etc.
Air Quality Stations	01, KSPCB building, Sira road (SC-685)
Location of Tumakuru City	 A map of the state of Karnataka, India, with its districts outlined in light blue. The Tumakuru district is highlighted in a darker yellow color. The word 'TUMKUR' is printed in black capital letters within the highlighted district. In the top-left corner of the map, there is a small inset map of India with a black dot indicating the location of Karnataka. The website address 'www.veethi.com' is visible in the bottom-right corner of the map image.

2. DETAILS OF NAMP STATIONS

The Ambient Air quality monitoring station existing in Tumakuru is located at KSPCB building, KIADB Industrial Area, Sira Road (SC685). It comes under industrial category. The monitoring of this station is carried out by KSPCB, the monitoring of pollutants is carried out for 24 hours (4 hourly sampling for gaseous pollutants and 8 hourly sampling for particulate matter)

with a frequency of twice a week. The parameters monitored are Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂) and Particulate Matter (PM₁₀).

3. DATA FOR AIR QUALITY INDEX (AQI) CALCULATION

The KSPCB, on request has sent the NAMP station data for the month of December 2015 for the station. This data is used for preparing the AQI for this station. The parameters monitored at this station are Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂) and Particulate Matter (PM₁₀). All these parameters are considered for calculation of AQI.

4. CALCULATION OF AIR QUALITY INDEX (AQI)

The AQI is calculated as following:

- The data received from the KSPCB was in 4 hourly concentration for SO₂ and NO₂ and 8 hourly for PM₁₀ parameters. It was converted into 24 hourly average concentrations.
- The Sub-indices for individual pollutants are calculated using 24 hourly average concentration value and health breakpoint concentration range.
- The formula used for calculation of Sub-indices is:

$$I_p = \left[\frac{(I_{HI} - I_{LO})}{(B_{HI} - B_{LO})} \right] * (C_p - B_{LO}) + I_{LO}$$

Where

B_{HI} = Breakpoint concentration greater or equal to given concentration

B_{LO} = Breakpoint concentration smaller or equal to given concentration

I_{HI} = AQI value corresponding to B_{HI}

I_{LO} = AQI value corresponding to B_{LO}; subtract one from I_{LO}, if I_{LO} is greater than 50

AQI = Max (I_p) (where; p= 1, 2... n); denotes n pollutants

- The NAMP data received from the KSPCB was fed into the AQI calculator prepared in the Microsoft Excel sheet and the value of Sub-indices and AQI was calculated.

5. RESULT

Since manual stations measure PM_{10} , it is suggested that for manual station AQI for monitoring days can be calculated as long as PM_{10} or $PM_{2.5}$ is measured. It is suggested that for manual station, AQI is reported for at least three parameters and one of them should be PM_{10} or $PM_{2.5}$ possibly on weekly basis.

AQI is calculated for the month of December 2015 for monitoring station at KSPCB building, Sira road (SC-685)

KSPCB building, KIADB Industrial area, Sira road (SC-685), December, 2015

AIR QUALITY INDEX (AQI)				AQI	
SUB INDEX					
Date/Month	NO₂	SO₂	PM₁₀		
01-12-15	12	3	43	43	GOOD
04-12-15	18	3	21	21	GOOD
08-12-15	26	3	25	26	GOOD
10-12-15	24	6	47	47	GOOD
15-12-15	27	3	106	106	MODERATELY POLLUTED
18-12-15	16	3	91	91	SATISFACTORY
22-12-15	27	3	19	27	GOOD
25-12-15	16	3	46	46	GOOD
29-12-15	13	3	64	64	SATISFACTORY

From the above interpretation of AQI for Tumakuru city, the air quality is falling under Moderately polluted category. It is due to the various Industrial processes and vehicular movement in the vicinity.