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AMBIENT AIR QUALITY IN TERMS OF (NITROGEN DI OXIDE (NO_X) IN AND AROUND ARIYALUR, PERAMBALUR DT, TAMIL NADU

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ABSTRACT

Ariyalur, the land of fossils, is found to be embedded with rich limestone deposits. Hence around nine cement factories have been established in and around Ariyalur. This becomes one of the source of air pollution in this area. The high value of NO_X were recorded in the present study at the vellalar Street during day time i.e., 111 μg/m^3 and during night time it was 103 μg/m^3. Lowest mean value of NO_X values has been recorded in Anna nagar during day time i.e., and in night time i.e., 15 μg/m^3

INTRODUCTION

Air pollution seriously damages material resources of the cities, such as building and various works of arts, vegetation and corrosion of materials. It is broadly due to particulate matter dispersed in it or gaseous pollutants completely miscible with it in all proportion.

Dusts - (l-100 μ)
Aerosols - (< 1μ.)
Smoke - (0.01-1(1μ)

Fumes, mists, fog, smog all contribute to particulate matter. Gaseous pollutants such as- SO_2, Nox, CO_2 etc.,

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MATERIALS AND METHODS

METEROLOGICAL PARAMETERS

Temperature

March to June is the summer season in which the daily maximum temperature is 39.5° to 42.80°. Onset of monsoon brings relief to the region. During the north east monsoon between October and December the mean daily maximum temperature varies from 33.3° to 36.7° C. The Coolest month is December, January and February when the minimum temperature drops to 15.6°C.

Humidity

The relative humidity varies from 20 to 78% in summer and from 40 to 97% in the monsoon months. The area is dry during greater part of the year. Humidity is high during the north east monsoon period of October, November and December.

Wind Velocity & Wind direction

Wind velocity varies from 10 km/hr . A maximum velocity of 129 Km/hr was recorded during the cyclone of May 1995. cyclone weather is encountered almost every year during the north east monsoon period (NEERI, 1991)

MEASUREMENT OF NO_X

The survey included five sites selected according to the location of mining, non mining and residential sources which include (1) College campus (2) Anna nagar (3) Maruthi nagar (4) Railway gate (5) vellalar Street. Hence, it was possible to use the High volume gas sampler for gaseous sampling simultaneously. The gaseous sampling kit (available as an attachment) it connected to nozzle in the hopper. The air is bubbled through standard solutions in the impingers, at a flow rate of 0.5 to 1 LPM for destined duration. The range of analysis is 0.01 to 1.5 µg Nitrogen di oxide/mL., with 30mL absorbing reagent

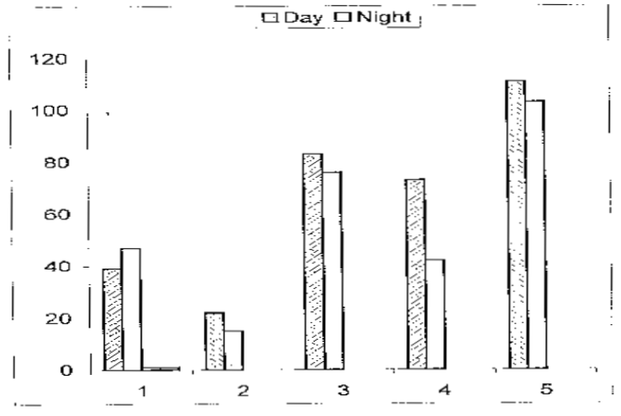

Fig. 1 NO_X levels in and around Ariyalur during February 2006.

Table 1
Ambient air quality Indian standard (micro gram /m^3)
(CPCB, Govt. of India)

Area	Spm	SO_2	NO_X	CO
Industrial area	500	120	120	5000
Residential & rural area	200	80	80	2000
sensitive	100	30	30	1000

Table 2
Micrometerological parameters in study area

Sr. No.	Area	Temperature		Humidity (%)		Km/sec	
		Day	Night	Day	Night	Day	Night
1.	College Campus	28° C	28° C	39.87	60.25	759	759
2.	Anna Nagar (N)	29° C	29° C	63.62	71.0	759	758
3.	Maruthi Nagar (E)	28° C	28° C	59.62	72.37	760	760
4.	Railway Gate (W)	29° C	29° C	60.37	74.25	758	757
5.	Vellalar Street (S)	30° C	30° C	53.75	72.87	757	757

Table 3
Summary of NO_X level in around Ariyalur during Feb'2006

Sr. No.	Areas	Location	Value of NOx in Day time (µg/m^3)	Value of NOx in Night time (µg/m^3)
1.	College Campus	Centre	39	47
2.	Anna Nagar	N	22	15
3.	Maruthi Nagar	E	83	76
4.	Railway Gate	W	73	42
5.	Vellalar Street	S	111	103

and sampling, rate of 200 mL/min for 24 hours, the range of the method is 20 to 740 µg/m^3 (0.0l to 0.4 ppm) Nitorgen dioxide (NEERI, 1991).

RESULTS AND DISCUSSION

The meterological parameters are shown in Table 2. The temperature has shown not much variation as the period of study happens to be January to March . High humidity recorded was about 74% and the minimum being about 39%. The wind velocity ranged about 42 km/hr both during the morning similar results have been reported for day and night hours.

No_x reacts with the atmospheric hydrocarbons in the presence of Sunlight, hence its concentration is low during the afternoon hours; it is also stated that Ozone concentration is high during this period which however, cannot be substantiated by the present study, as Ozone was not estimated.

The highest values of NO_X recorded in the study were at the Vellalar street during day time i.e., 111 µg/m^3 and during night time i.e., 103 µg/m^3. Low

means of NO_X Values as been recorded in the Anna nagar during Day time i.e., 22 µg/m^3 and in night time i.e., 15 µg/m^3 (Table 3; Fig. l).

During the period of air sampling i.e., Feb 2006 levels of NO_X during day time & night time, were higher than the standard prescribed by CPCB. Out of the sampling stations Anna nagar has recorded lesser NO_X values during the day and night time. NO_X Levels in the Maruthi Nagar and Railway gate were slightly higher than the standard during the day time. But other wise in the sampling station college campus which are located centre of sampling sites.

Though the wind during the period of estimation was pre dominantly form north east, the dispersal of pollutants namely NO_X was very higher in the sampling stations located at the east west and north direction with respect to the Anna nagar and the NO_X level was lesser only in the sampling station located in the northern direction. Similar results has been reported by Sharma *et al*. 1995

REFERENCES

Mohanraj, R. and Azeez, P.A. 2005. Urban development and participate air pollution in coimbatore city, India. *International Journal of Environmental Studies*. 62 (1) : 10.

NEERI, 1991. Air Pollution aspects of three Indian mega cities Vol.11 Bombay, NEERI, Nagpur.

Sharma, V. and Sharma, J.C. 1995. Ambient air quality monitoring at Bombay University campus -A case study. *Pollution Ressearch.* 14 (2) : 199-201.