Report on

Ambient Air Quality Monitoring

conducted by

Portable Station

at

Different locations in Delhi

(*February 2008*)

CENTRAL POLLUTION CONTROL BOARD
(Ministry of Environment & Forests, Govt. of India)
Parivesh Bhawan, East Arjun Nagar,
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Contributors

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1.0 OBJECTIVE AND SCOPE OF THE MONITORING

The sources of air pollution broadly divided into two categories i.e. natural & man made (artificial). The air pollution in urban areas is increasing drastically with the contribution of multiple sources such as Industrial, vehicular, domestic etc. The concentration of air pollution can vary considerably from one location to another as they depend not only on the quantity that are emitted but also on the atmospheric conditions i.e. Temperature, Wind Speed & Direction etc. The air pollution concentrations vary temporally, causing the air pollution pattern to change with different locations and time of the day, week or year. Air pollutants are needs to be monitored to ascertain their characteristic and concentration in the ambient air. This will help us to take necessary preventive and control measures.

With this in view, the ambient air quality monitoring has been carried out at 03 locations i.e.

1) Presentation Convent Sr. Sec. School, S.P. Mukerjee Marg, Delhi.
2) National Physical Laboratory, Pusa road, Delhi.
3) Government Engineering College, Jafar Pur, Delhi

with the portable mobile station which consists automatic analysers, gives real time values of different pollutants.

The major objectives of the study are as below:

- Assessment of air pollution concentrations at different locations with varying number of anthropogenic sources of pollution;
- To study the temporal and diurnal variation in pollutants concentration along with traffic activities;
- To assess the status of air pollution to adjudge the effectiveness of air pollution control strategies and long term management of air pollution; and
- To formulate further preventive and control measures for abatement of air pollution.

2.0 Status of pollutants in ambient air

2.1 Location of the Monitoring: - **Presentation Convent Sr. Sec. School, S.P Mukerjee Marg, Delhi.**

Period of the Monitoring: - **19th – 23rd February 2008**

Timing: - **00:00 - 24:00 hours**

The monitoring has been conducted at Presentation Convent Sr. Secondary School, located at one of the corner of Red Fort crossing. The Red Fort crossing is very prominent and one of the busy intersection with respect to vehicular traffic. Lajpat Rai market which is a famous wholesale market for electrical/ electronics products is just adjacent to this school. The distance of old Delhi Railway Station is also not very far from this school. This area has a very heavy vehicular density.

Table -1: Concentration of NO_2, SO_2, O_3, $PM_{2.5}$ and PM_{10} (24 hourly average)

DATE	NO_2	SO_2	O_3	$PM_{2.5}$	PM_{10}
	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)
19/02/2008	**119**	**44**	**56**	**106**	**260**
20/02/2008	**134**	**47**	**68**	**136**	**278**
21/02/2008	**132**	**61**	**61**	**141**	**277**
22/02/2008	**66**	**34**	**45**	**98**	**178**
23/02/2008	**79**	**47**	**44**	**103**	**216**
AVERAGE	**106**	**46**	**55**	**117**	**242**
Standards	**80**	**80**	**-**	**-**	**100**

Graphical Presentation (24 hourly Average)

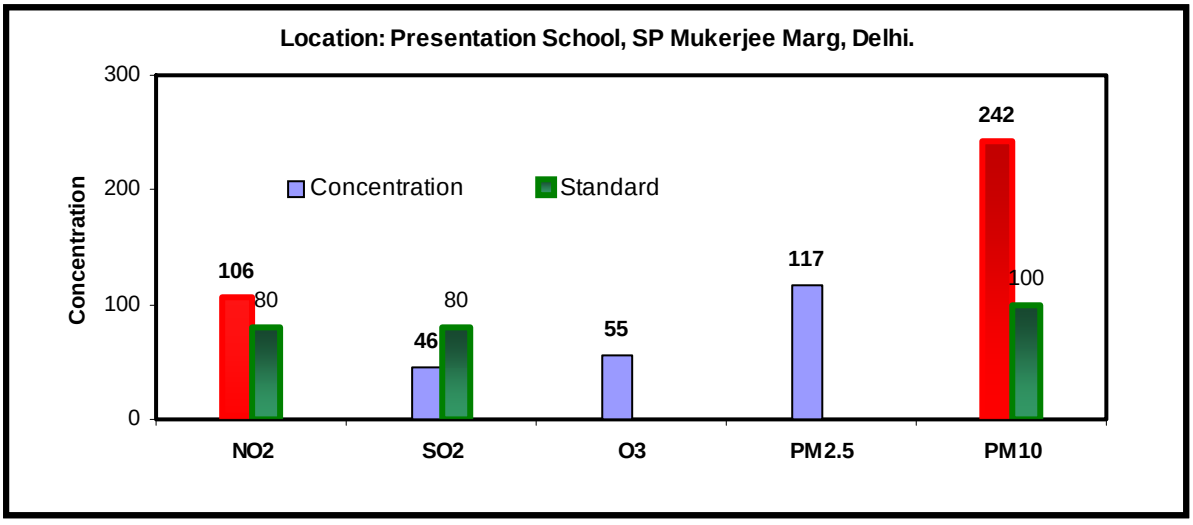
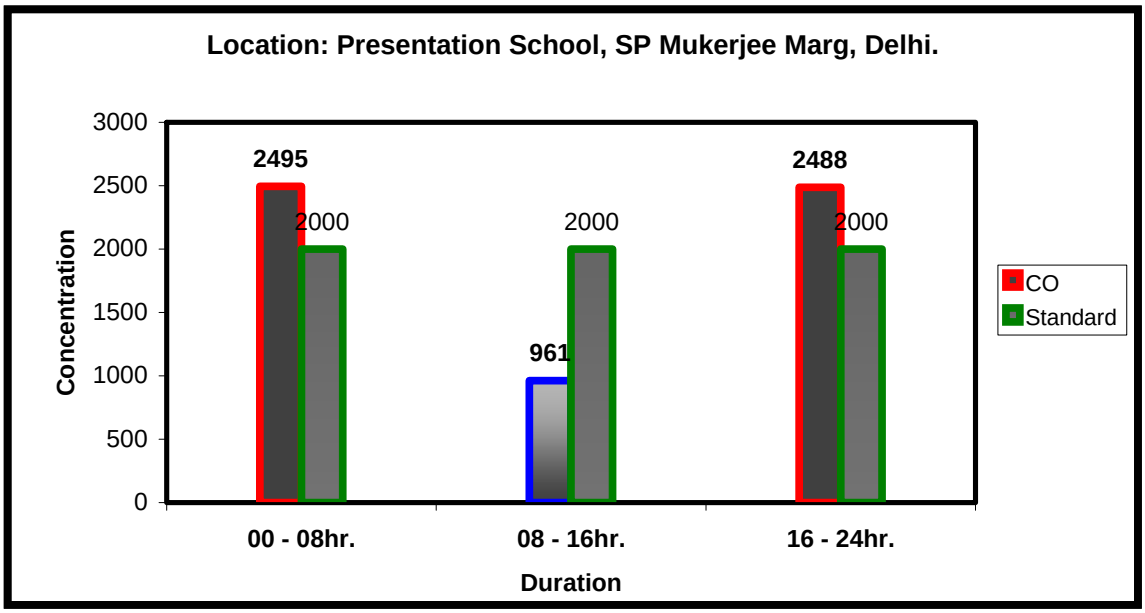


Table – 2: Concentration of CO (8 hourly average)

DATE	CO (µg/m$^{3)}$			
	8 Hourly Average			
	(00.00-08.00)	(08.00-16.00)	(16.00-24.00)	Standards
19/02/2008	-	649	3047	2000
20/02/2008	3486	1170	4123	2000
21/02/2008	4815	1297	1874	2000
22/02/2008	968	787	933	2000
23/02/2008	711	903	2461	2000
AVERAGE	**2495**	**961**	**2488**	2000

Graphical Presentation for CO (8 hourly average)



Data Analysis:

- NO_2 concentration ranges from 66 - 134 µg/m^3**.** Except on two days i.e. 22nd & 23rd February' 08, the levels found exceeded the standards. The low values on these two days may be due to holidays (Saturday & Sunday) and reason for high values is due to continues traffic flow near to school.

- SO_2 concentration found below the standards for all the days.

- PM_{10} concentration has been observed very high as compared to the prescribed standards which may be due to heavy traffic density (petrol & diesel driven) in the near by area.

- The 8 hourly average CO concentrations has been exceeding the prescribed limit in morning and night shift , which may be due to heavy vehicles movement.

2.2 Location of the Monitoring: **National Physical Laboratory (N.P.L.), Pusa Road, Delhi.**

Period of the Monitoring: **25th February – 1st March 2008**

Timing: **00:00 - 24:00 hours**

The monitoring has been conducted at N.P.L. premises, which is near to Pusa Road. The premise is approx. 100 meters away from the main road and surrounded with Govt. Offices. One side of this institute is covered with greenery.

Table -3: Concentration of NO_2, SO_2, and O_3 (24 hourly average)

DATE	NO_2	SO_2	O_3
	(µg/m3)	(µg/m3)	(µg/m3)
25/02/2008	25	12	6
26/02/2008	35	10	6
27/02/2008	53	14	12
28/02/2008	68	16	15
29/02/2008	105	24	19
01/03/2008	104	23	15
AVERAGE	**65**	**16**	**12**
Standards	80	80	-

Graphical Presentation of NO_2, SO_2, and O_3 (24 hourly average)

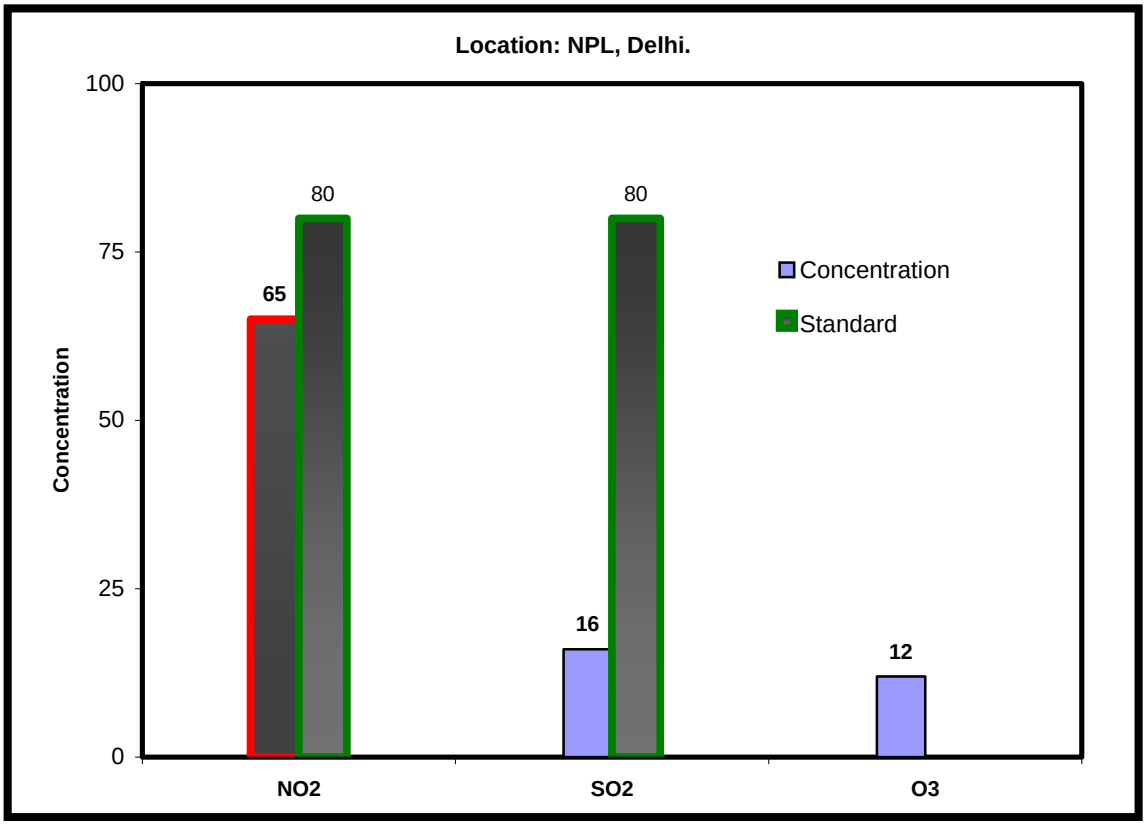
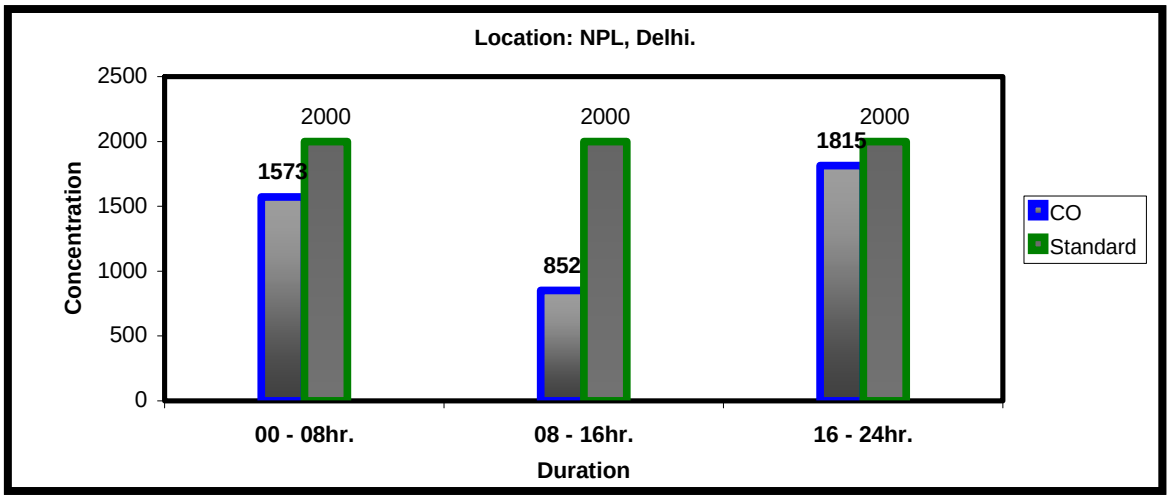


Table – 4: Concentration of CO (8 hourly average)

DATE	CO (µg/m^3)			
	8 Hourly Average			
	(00.00-08.00)	(08.00-16.00)	(16.00-24.00)	Standards
25/02/2008	-	450	512	2000
26/02/2008	423	442	948	2000
27/02/2008	748	611	1447	2000
28/02/2008	1690	760	1954	2000
29/02/2008	1864	1593	2378	2000
01/03/2008	3140	1258	3652	2000
AVERAGE	**1573**	**852**	**1815**	2000

Graphical Presentation for CO (8 hourly average)



Data Analysis:

- The 24 hourly average concentration of NO_2 has been found 65µg/m^3, which is well within the prescribed limit. Exceeded 24 hourly average standard of 80 µg/m^3 on 2 days out of 6 days of monitoring.
- SO_2 concentration is found well within the standard on all the days.
- The 24 hourly average concentration of Ozone was found to be 12µg/m^3.
- The 8 hourly average CO concentrations have been found well within the limit during all the shifts.

2.3 Location of the Monitoring: **Government Engineering College, Jafar Pur, Delhi.**

Period of the Monitoring: **13th – 25th March 2008**

Timing: **00:00 - 24:00 hours**

The monitoring has been conducted at the campus of Government Engineering College, Jafar Pur, which is approximately 12K.Mtrs away from the Nazafgargh, Delhi. The college is surrounded with the villages & agriculture land. No commercial activities existing in near by area.

Table -5: Concentration of NO_2, SO_2, and O_3 (24 hourly average)

DATE	NO_2 (µg/m3)	SO_2 (µg/m3)	O_3 (µg/m3)
Standards	**80**	**80**	**-**
13/03/2008	24	8	11
14/03/2008	32	10	11
15/03/2008	21	14	12
16/03/2008	22	11	10
17/03/2008	29	15	10
18/03/2008	32	10	10
19/03/2008	36	31	12
20/03/2008	30	20	10
21/03/2008	18	12	10
22/03/2008	13	10	10
23/03/2008	15	15	10
24/03/2008	22	10	9
AVERAGE	**25**	**14**	**10**

Graphical Presentation of NO_2, SO_2, and O_3 (24 hourly average)

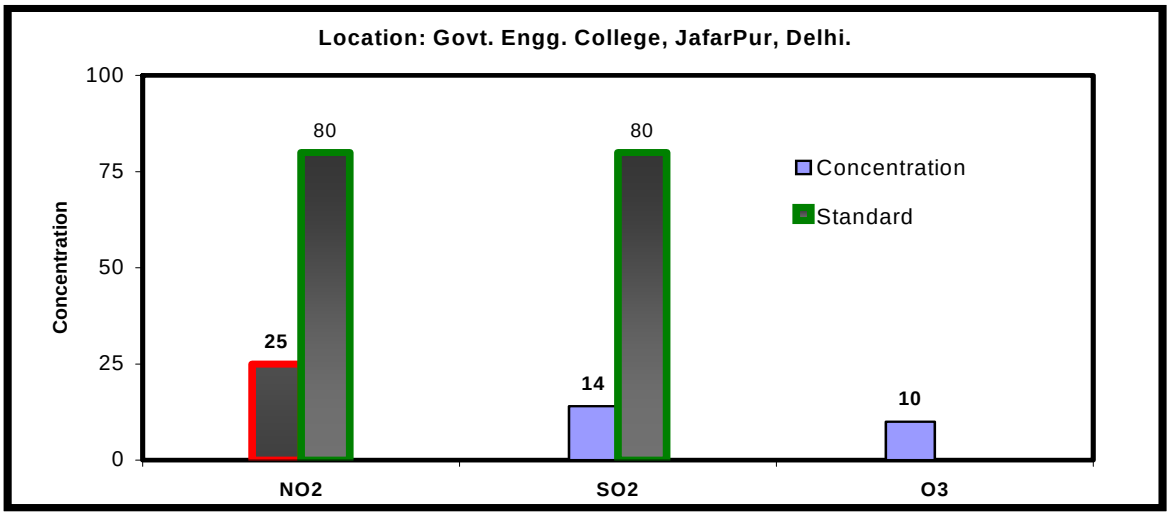
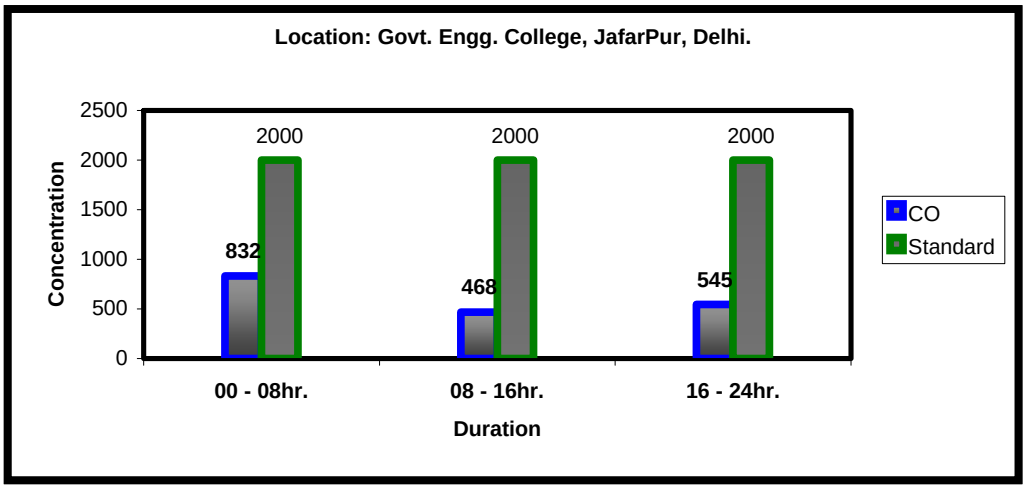


Table – 6: Concentration of CO (8 hourly average)

DATE	CO (µg/m$^{3)}$			
	8 Hourly Average			
	(00.00-08.00)	(08.00-16.00)	(16.00-24.00)	Standards
13/03/2008	904	470	730	2000
14/03/2008	1042	383	524	2000
15/03/2008	1060	483	612	2000
16/03/2008	626	511	564	2000
17/03/2008	661	531	633	2000
18/03/2008	795	326	972	2000
19/03/2008	1398	807	363	2000
20/03/2008	576	516	499	2000
21/03/2008	832	442	449	2000
22/03/2008	712	386	411	2000
23/03/2008	686	449	344	2000
24/03/2008	687	317	435	2000
AVERAGE	**832**	**468**	**545**	2000

Graphical Presentation for CO (8 hourly average)



Data Analysis:

- The 24 hourly average values of NO_2, SO_2, and O_3 have been found to be well within the standard on all the days.
- The 8 hourly average CO values also found well within the standard on all the shifts of all the days.
- The reason for low values of all the parameters may be due to non-existence of any commercial & industrial activities in near by area. The traffic density is also very low.

Table – 7: Summary of Monitoring

Locations	Parameters (µg/m^3)					
	NO_2	SO_2	O_3	$PM_{2.5}$	PM_{10}	CO
Presentation School	106	46	55	117	242	1981
N P L, Pusa Road	65	16	12	-	-	1414
Jafar Pur	25	14	10	-	-	615
Standards	80	80	-	-	100	2000

Note: 1. For No2, SO2, O3, PM 2.5 & PM10 -- 24 hourly average.
2. For CO -- 0 8 hourly average.

4.0 Recommendations:

From the monitoring data of selected three locations, it has been found that the 24 hourly average values of NO2, PM 10 & 8 hourly average value of CO during morning and night time is above the prescribed standard at Presentation Convent School. Diverting some part of the traffic by applying proper traffic management system during peak hours could reduce the levels of these pollutants.