AIR QUALITY MANAGEMENT & TRENDS

Ministry of Environment, Forest & Climate Change

Government of India

Challenges

- Rapid industrialization(MSME Sector)
- Growing number of vehicles
- Construction activities
- Biomass & Stubble burning
- Dust storms & road dust
- DG-sets (Electricity generation)

Air Pollution

- Sources :
  - Vehicular Pollution (9-20%),
  - Industrial Pollution (6-9%),
  - Domestic (3-9%),
  - Construction Activities (23%),
  - Road Dust (14-29%),
  - DG Sets (7-12%).

- No. of Vehicles registered annually:

Annual registration –

- 2012-13 - 526257
- 2013-14 - 532043
- 2014-15 - 590075

- Stubble burning from NCR States mainly in Punjab and Haryana.
- Dust from Rajasthan & in winter, calm condition, inversion and biomass burning.

REVISED NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS), Nov 2009

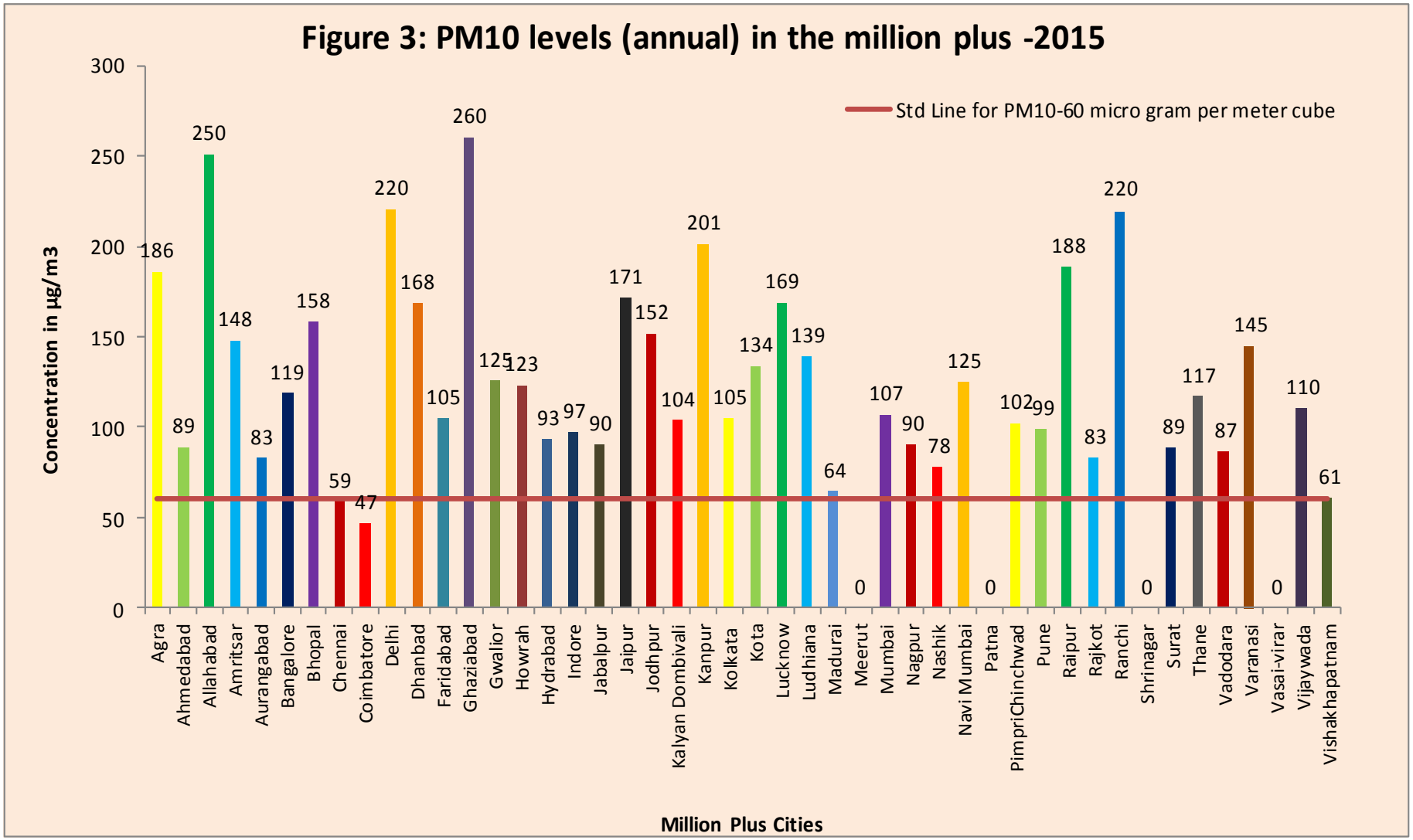
S. No.	Pollutants	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (notified by Central Government)	
1	Sulphur Dioxide (SO_2), µg/m³	Annual*	50	20	1. Improved West and Gaeke
		24 Hours**	80	80	2. Ultraviolet Fluorescence
2	Nitrogen Dioxide (NO_2), µg/m³	Annual*	40	30	1. Modified Jacob & Hochheiser (Na-Arsenite)
		24 Hours**	80	80	2. Chemiluminescence
3	Particulate Matter (Size <10µm) or PM_{10} µg/m³	Annual*	60	60	1. Gravimetric
		24 Hours**	100	100	2. TOEM 3. Beta attenuation
4	Particulate Matter (Size <2.5 µm) or $PM_{2.5}$ µg/m³	Annual*	40	40	1. Gravimetric
		24 Hours **	60	60	2. TOEM 3. Beta attenuation
5	Ozone (O_3), µg/m³	8 hours**	100	100	1. UV photometric
		1 hours **	180	180	2. Chemiluminescence 3. Chemical Method
6	Lead (Pb), µg/m³	Annual *	0.50	0.50	1. AAS/ICP Method after sampling using EPM 2000 or equivalent filter paper 2. ED-XRF using Teflon filter
		24 Hour**	1.0	1.0	
7	Carbon Monoxide (CO), mg/m³	8 Hours **	02	02	Non dispersive Infra Red (NDIR) Spectroscopy
		1 Hour**	04	04	
8	Ammonia (NH_3), µg/m³	Annual*	100	100	1. Chemiluminescence
		24 Hour**	400	400	2. Indophernol blue method
9	Benzene (C_6H_6) , µg/m³	Annual *	05	05	1. Gas chromatography based continuous analyzer 2. Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP)- particulate phase only, ng/m³	Annual*	01	01	Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m³	Annual*	06	06	AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m³	Annual*	20	20	AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

** Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform interval.*

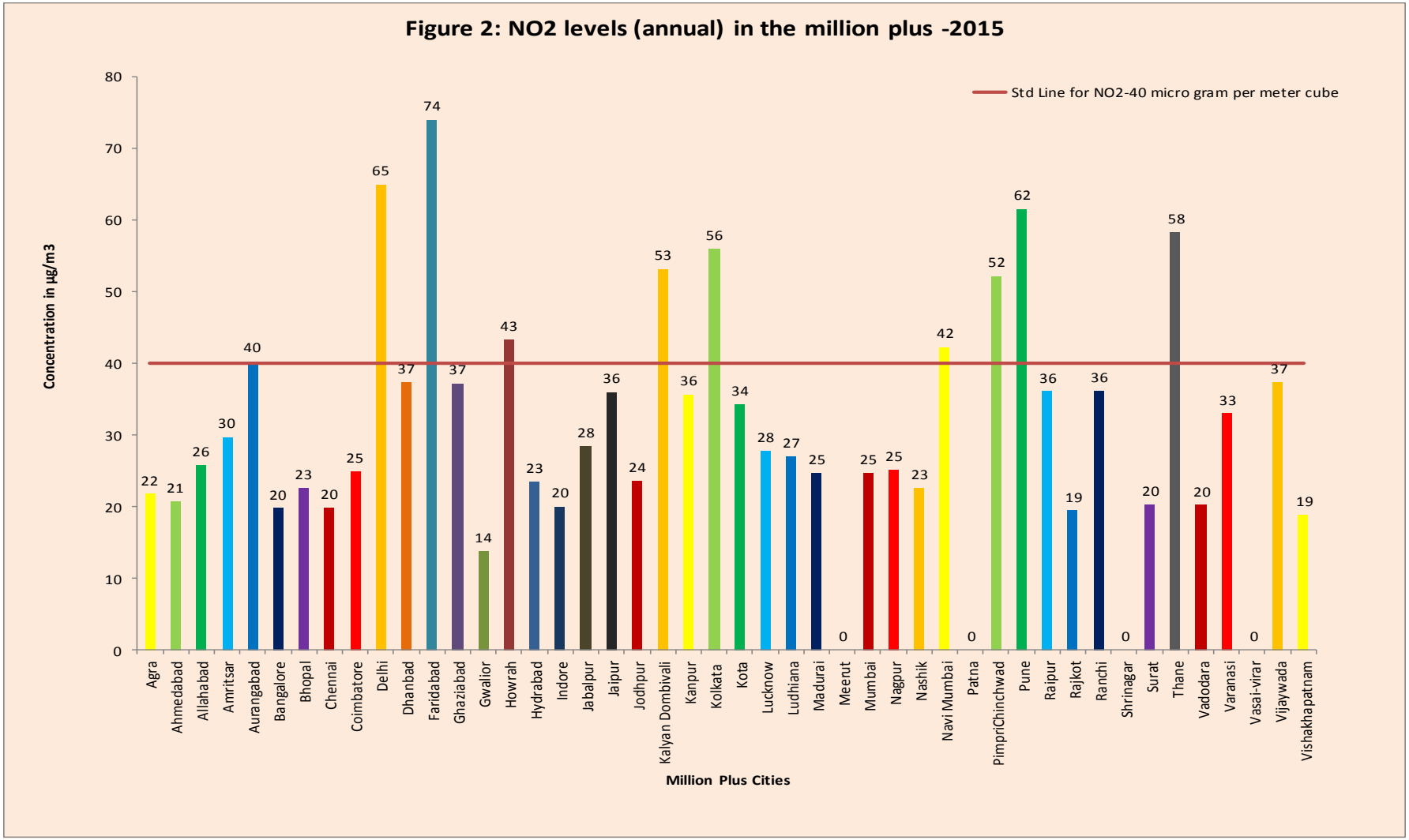
*** 24 hourly 08 hourly or 01 hourly monitored values, as applicable shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.*

NOTE: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation

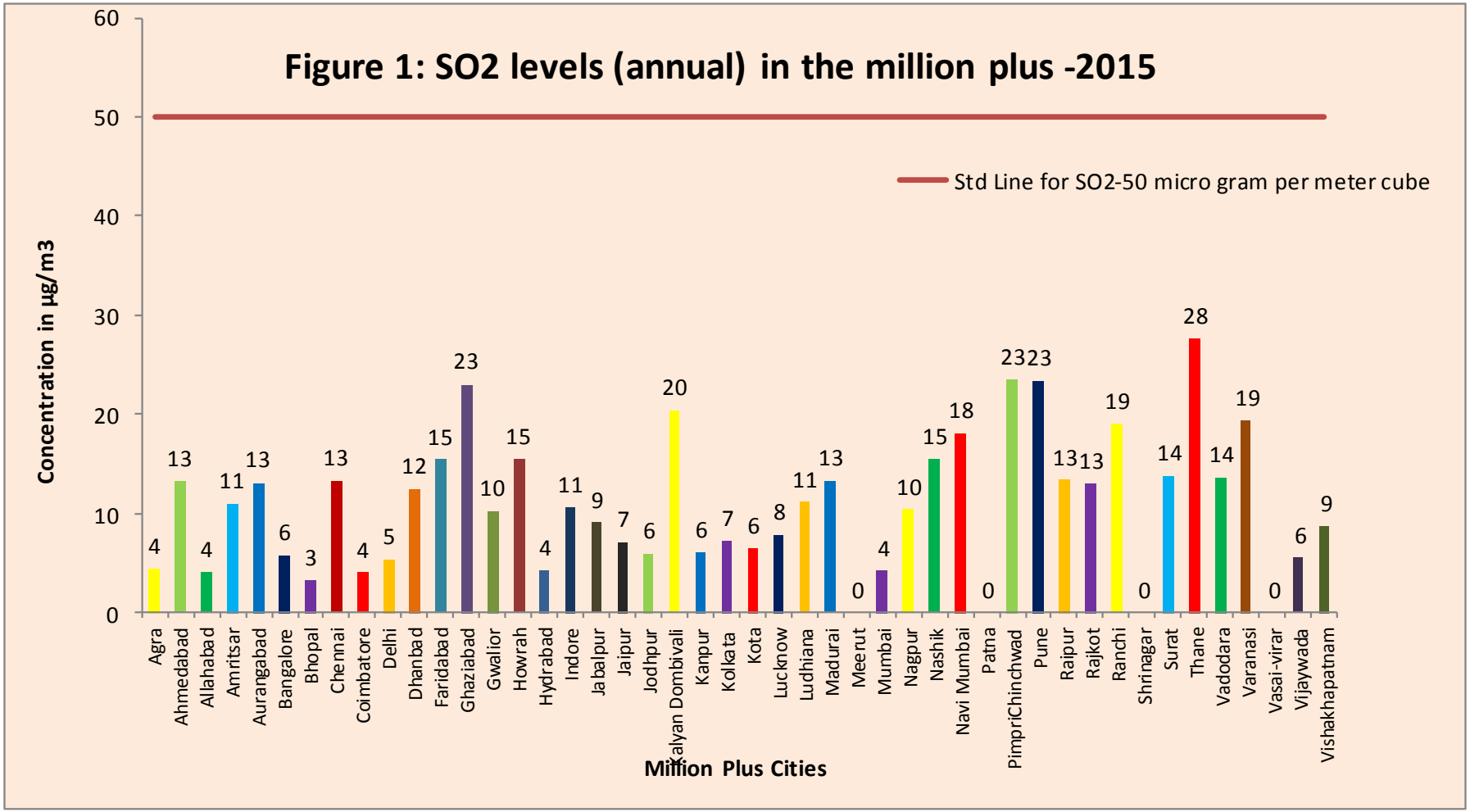
PM_{10} LEVELS (Annual)



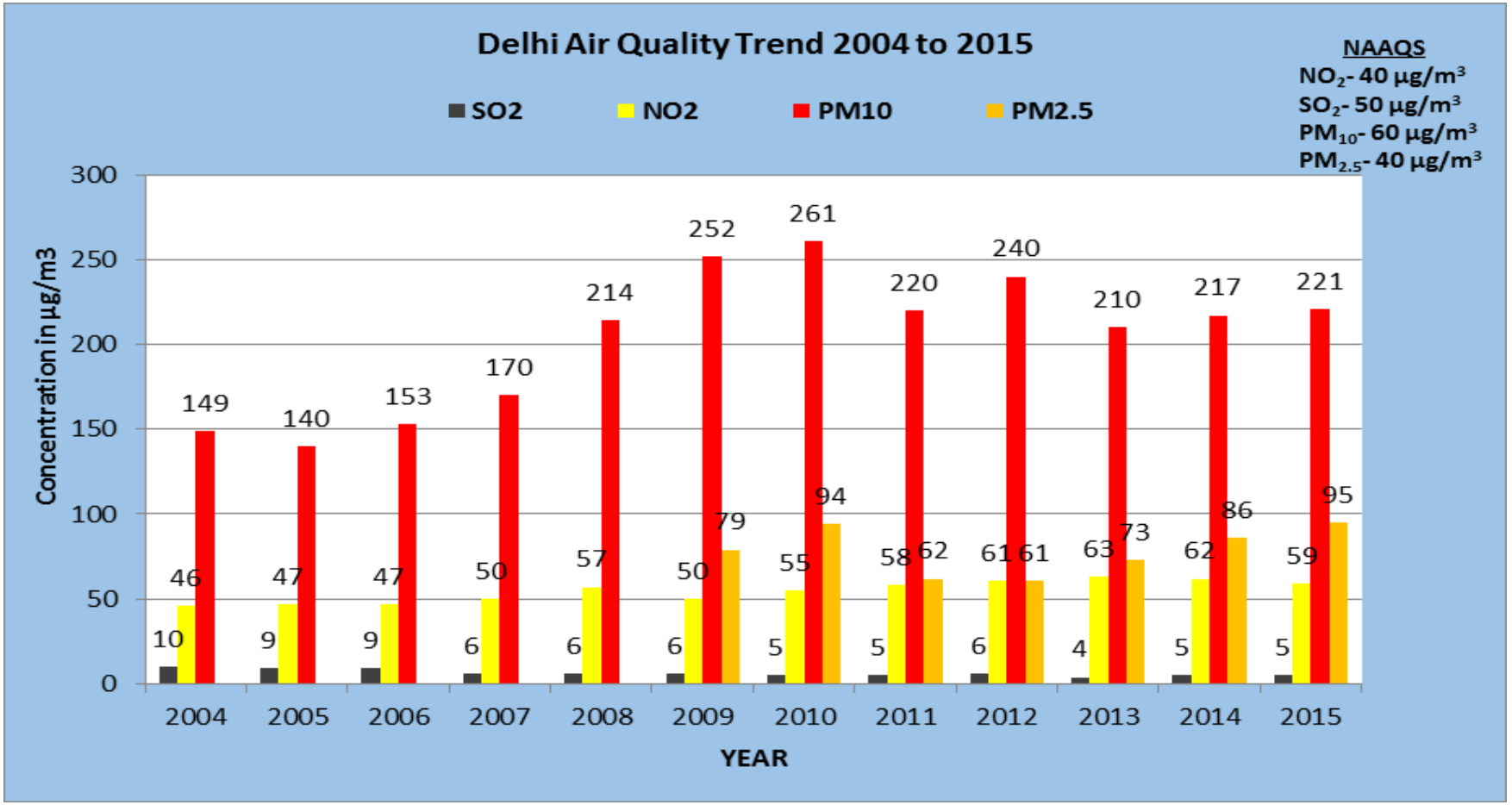
NO_2 LEVELS (Annual)



SO_2 LEVELS (Annual)

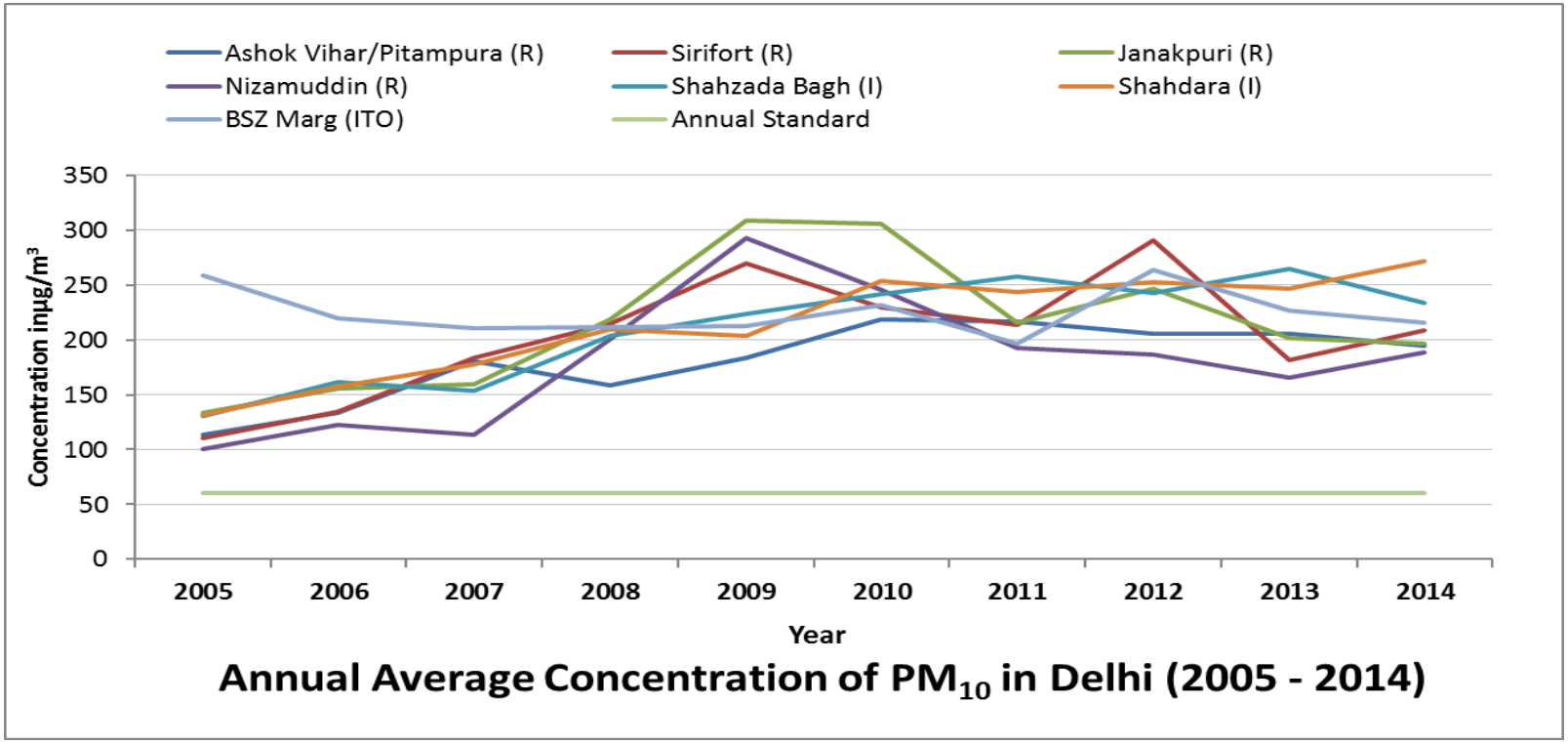


LEVELS of PM_{10}, $PM_{2.5}$, SO_2, & NO_2



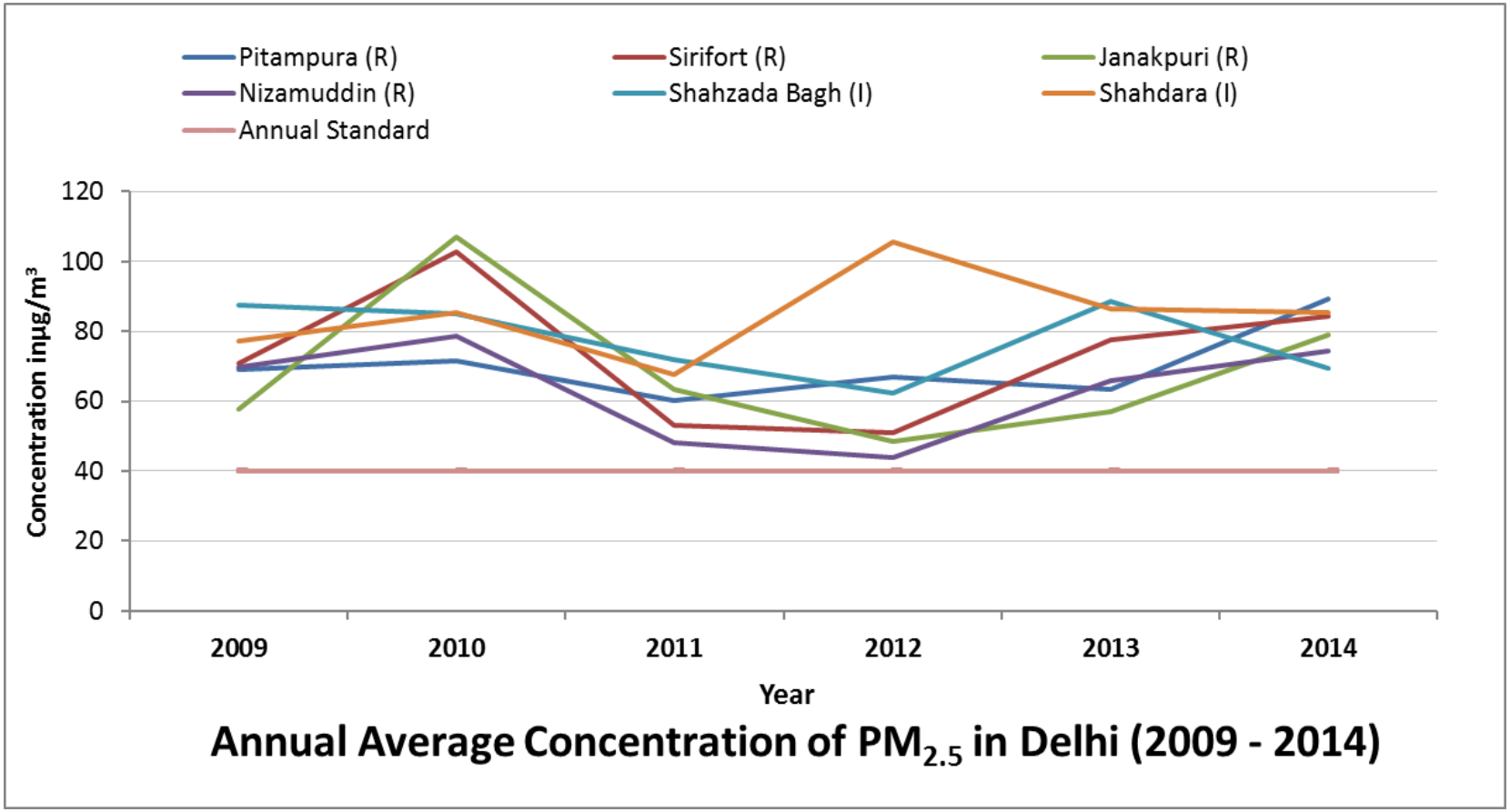
Trend of PM_{10} in Delhi

Air Quality Status(*µg/m3*) average of 10 yrs (10 Stations)-
PM10 = 107-309,



Trend of $PM_{2.5}$ in Delhi

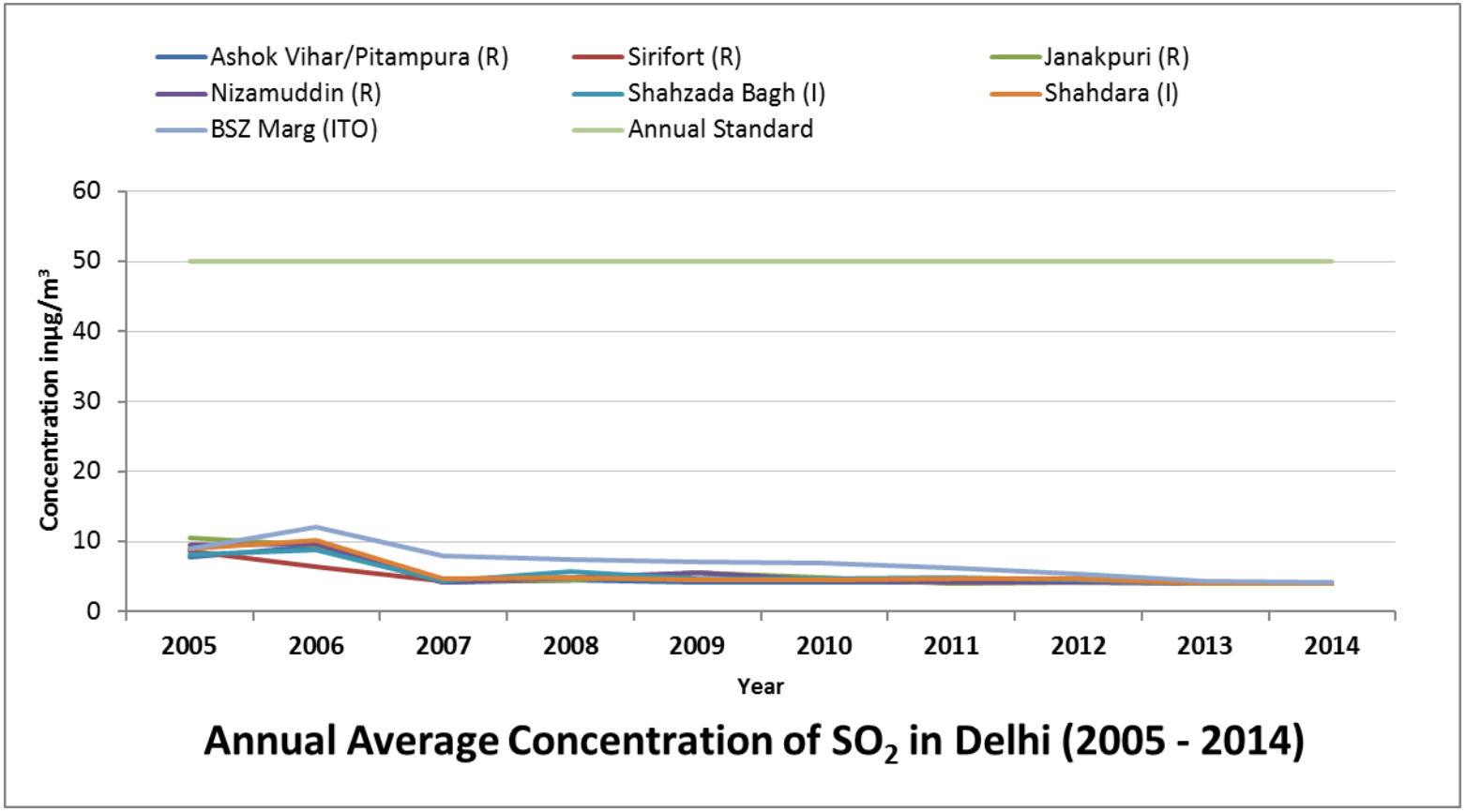
Air Quality Status(*µg/m3*) average of 06 yrs (10 Stations)-PM 2.5 = 61 -89,



The air quality scenario with respect to SO2, NO2 and PM10 in million plus cities is represented in figure 1, 2, and 3

Trend of SO_2 in Delhi

Air Quality Status(*µg/m3*) average of 10 yrs (10 Stations)-
NOx= 26-94,



Strategies & Steps Taken

- 5 Minister level (April- April, 2016) meetings held
- Short Term (3 Months) & Long Term Action Plan formulated by NCR states.
- These action plans being implemented by NCT of Delhi & NCR States
- Action Plans for 95 non-attainment cities
- About 2000 industries installed 24x7 emission monitoring devices.
- Strengthening public transport-Metro & Buses
- Promotion of Battery operated Vehicles
- Universalization of BS-IV by 1st April, 2017
- Leapfrogging to BS-VI by 1st April, 2020
- Launch of Air Quality Index
- Ban on 15 years old commercial vehicles

Strategies & Steps Taken

- Extensive use of clean fuels like CNG, LPG & NG
- Computerized PUC Management System at 700 centers.
- WhatsApp helpline (9717593574) launched for lodging complaints w.r.t. burning of leaves.
- Western Peripheral (KMP) Expressway of 135 kms., completed; Eastern Peripheral (KGP) Expressway of 135 kms., awarded- Construction will start in March 2016.
- Levy of Environment Compensation Charge (ECC) pursuant to SC order.
- Promotion of gas based Power Plants (about 2000 MW capacity

Steps for Preventing Stubble Burning

Haryana-

- Banned under Air Act vide Notification No.12/6/2003-Env.III dated 16.09.2003.
- HARSAC study indicates 20% reduction in stubble burning between 2013 and 2014.

Rajasthan-

- Banned under Air Act vide Notification No.F.12(1) Env./2015 dated 27.8.2015 .

U.P.-

- Banned burning of crop residue.

Delhi-

- Banned burning of leaves and biomass.

Punjab:

- Banned under Air Act vide Notification No. 946 dated 22.10.2013
- Punjab remote sensing studies of 2014 and 2015 indicate 42.37 % reduction in agriculture residue burning

THANKS