




Air Quality Index

Problem

The problem of air pollution has become a new challenge for the world. The air quality deteriorates throughout India in October and November months every year. The air quality is measured by the Air Quality Index. Let's know what is the Air Quality Index (AQI) in India?

What is Air Quality Index?

- AQI is an overall scheme that transforms individual air pollutant (e.g. SO_2 , CO , PM_{10}) levels into a single number, which is a simple and lucid description of air quality for the citizens.
- AQI relates to health impacts and citizens can avoid the unnecessary exposure to air pollutants;
- AQI indicates compliance with National Air Quality Standards;
- AQI prompts local authorities to take quick actions to improve air quality;
- AQI guides policy makers to take broad decisions; and
- AQI encourages citizens to participate in air quality management.



The logo features the letters 'AQI' in a large, blue, sans-serif font. The letter 'O' is replaced by a globe showing the continents. A semi-circular ring with six colored segments (blue, green, yellow, red, pink, and light blue) is positioned behind the globe.

AIR QUALITY INDEX	
AQI values	Levels of health concern
0 – 50	Good
51 – 100	Satisfactory
101 – 200	Moderately-polluted
201 – 300	Poor
301 – 400	Very Poor
401 - 500	Severe

Are we affected by poor AQ?

- The very young are at risk
 - Lungs are not fully developed
 - Faster breathing rate: more air volume/body weight
- The very old are at risk
 - Undiagnosed lung or heart diseases
 - Pollution can exacerbate these conditions
- Persons with chronic illnesses: Respiratory, circulatory, or cardiac diseases
- ✓ **Yes, EVERYONE!**
- Even healthy persons can be affected when they exercise outdoors, or if the concentration of pollutants is very high



Concept

Air quality indices have been created in different countries for the measurement of air quality. These indices measure the air quality in the country and indicate whether the amount of nitrogen dioxide, carbon monoxide and sulfur dioxide in the air exceeds the criteria set by the World Health Organization or not.

National Air Quality Index

- * India uses the National Air Quality Index (AQI), Canada uses the Air Quality Health Index, Singapore uses the Pollutant Standards Index and Malaysia uses the Air Pollution Index.
- * There are many cities including Beijing, Paris where 'pollution emergency' is declared. However, India also declared the same in November 2019.


What is Air Quality Index

- * The National Air Quality Index (AQI) in India was launched on 17 September 2014 in New Delhi under the Swachh Bharat Abhiyan by the Environment Minister Shri Prakash Javadekar.
- * **The air quality index is composed of 8 pollutants ((PM₁₀, PM_{2.5}, NO₂, SO₂, CO, O₃, NH₃, and Pb).**

6 categories air quality index

- * The Air Quality Index measures the quality of air. It shows the amount and types of gases dissolved in the air. **There are 6 categories of the air have been created in this air quality index.**
- * These categories are based on air quality. These categories are;

good, satisfactory, moderate, poor, very poor and severe.



AQI Category (Range)	PM₁₀ 24-hr	PM_{2.5} 24-hr	NO₂ 24-hr	O₃ 8-hr	CO 8-hr (mg/m³)	SO₂ 24-hr	NH₃ 24-hr	Pb 24-hr
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.6 –1.0
Moderate (101-200)	101-250	61-90	81-180	101-168	2.1- 10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	10.1-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748*	17.1-34	801-1600	1201-1800	3.1-3.5
Severe (401-500)	430 +	250+	400+	748+*	34+	1600+	1800+	3.5+

AQI	Associated Health Impacts
Good (0–50)	Minimal Impact
Satisfactory (51–100)	May cause minor breathing discomfort to sensitive people.
Moderately polluted (101–200)	May cause breathing discomfort to people with lung disease such as asthma, and discomfort to people with heart disease, children and older adults.
Poor (201–300)	May cause breathing discomfort to people on prolonged inhaling, and problems to people with heart disease.
Very Poor (301–400)	May cause respiratory illness to the people on prolonged inhaling. Effect may be more severe in people who are living with lung and heart diseases.
Severe (401–500)	May cause respiratory impact even on healthy people, and serious health impacts on people with lung/heart disease. The health impacts may be experienced even during normal walk also.

Data down loading / capturing from CPCB/WBPCB websites

Website: cpcb.nic.in

Website: wbpcb.gov.in

Choose Type of Station

- Automatic Station
- Manual Station

Submit



West Bengal Pollution Control Board

Air Quality Information System



Select District
Date

Submit

[AIR QUALITY INDEX](#)

State: Gujarat

City: Ahmedabad

Station: Maninagar, Ahmedabad - GPCB

11/04/2020

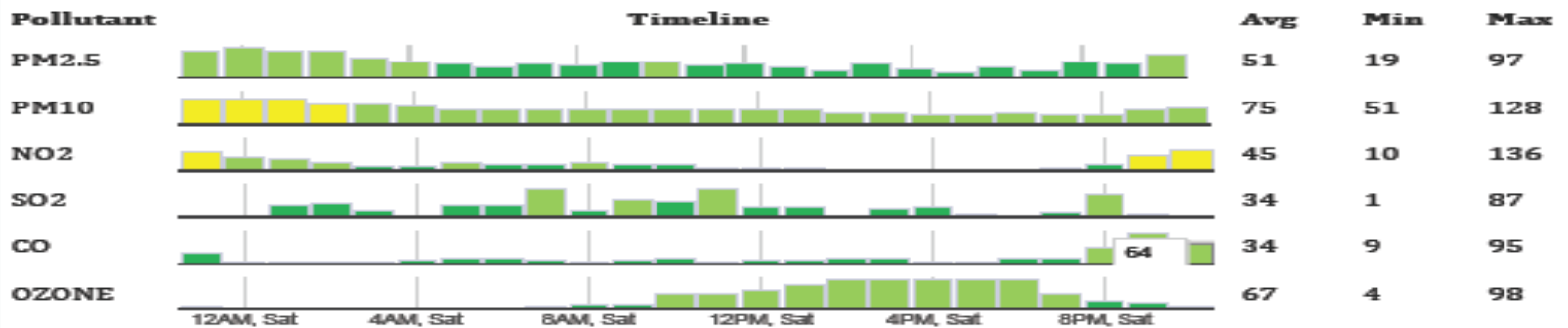
22:00



Maninagar, Ahmedabad - GPCB

Prominent Pollutant is **PM10**

On **Saturday, 11 Apr 2020 10:00 PM**



List of AQI Stations with Data of above selected Date & Time
Possible Health Impacts

AQI	Remark	Color Code
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State: Punjab

City: Jalandhar

Station: Civil Line, Jalandhar - PPCB

11/04/2020

22:00



Civil Line, Jalandhar - PPCB

Prominent Pollutant is **PM10**

On **Saturday, 11 Apr 2020 10:00 PM**

Pollutant	Timeline	Avg	Min	Max
PM2.5		34	28	46
PM10		35	29	48
NO2		11	10	13
NH3		2	2	2
SO2		4	2	11
CO		15	14	25

[List of AQI Stations with Data of above selected Date & Time](#)

AQI **Remark** **Color Code** **Possible Health Impacts**

State: **Delhi**

City: **Delhi**

Station: **Ashok Vihar, Delhi - DPCC**

11/04/2020

22:00

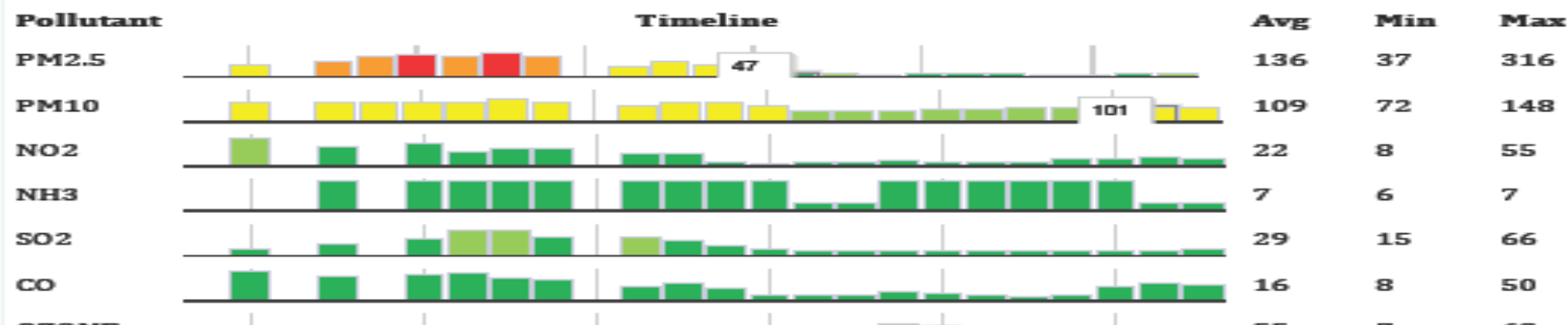
Moderate



Ashok Vihar, Delhi - DPCC

Prominent Pollutant is **PM2.5**

On **Saturday, 11 Apr 2020 10:00 PM**



List of AQI Stations with Data of above selected Date & Time

AQI Remark Color Code Possible Health Impacts



West Bengal Pollution Control Board

Air Quality Information System



SHOW AIR QUALITY INDEX (AQI)

Choose Options

District: Station: Date:

Submit

Reset



West Bengal Pollution Control Board

Air Quality Information System



SHOW AIR QUALITY INDEX (AQI)

Choose Options

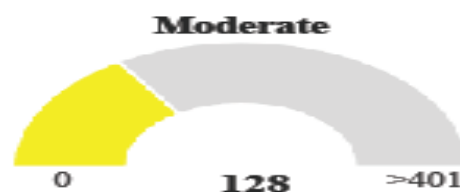
District: Station: Date:

Submit

Reset

AQI for Minto Park on 18/04/2019

Pollutant	Concentration ($\mu\text{g}/\text{m}^3$)	Sub Index
NO ₂	36.48	46
PM ₁₀	141.95	128
PM _{2.5}	46.48	77
SO ₂	9.15	11





West Bengal Pollution Control Board

Air Quality Information System



SHOW AIR QUALITY INDEX (AQI)

Choose Options

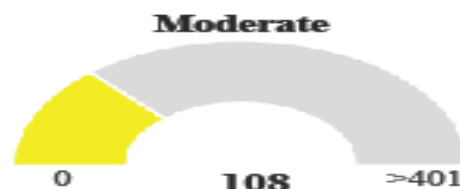
District: Station: Date:

Submit

Reset

AQI for Barasat on 16/04/2019

Pollutant	Concentration ($\mu\text{g}/\text{m}^3$)	Sub Index
NO ₂	26.51	33
PM ₁₀	112.10	108
SO ₂	7.41	9



[Dashboard](#) / [West Bengal](#)

West Bengal, India
Air Quality Index

231
Unhealthy

Last Updated : 07 Apr 2020, 08:45am



PM2.5 104 ug/m3
PM10 116 ug/m3
Temp 29°C
Noise 56 dB
Humid 53%

Air Pollution Level in West Bengal

CITIES	Status	AQI	PM2.5 ug/m3	PM10 ug/m3	Temp °C	Humid %	Noise dB
Asansol	Unhealthy	243	103	116	32	39	47
Kodalia	Unhealthy	226	108	127	30	58	60
Kolkata	Severe	306	128	137	28	54	58
Siliguri	Moderate	81	49	62	27	54	55

West Bengal Air Pollution Level
Real-Time Air Quality Index (AQI)

Health Advice

Outdoor Activities
Not Recommended

Air Purifier
Required

Pollution Mask
Required

Ventilation
Close Windows

Kids, Pregnant Women & Senior Citizens
Must Avoid Outdoor Activities

West Bengal Air Pollution Map



Air Quality of Metro Cities

New Delhi Good
Ahmedabad Good
Bengaluru Good

Mumbai Unhealthy
Pune Moderate
Chennai Good

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Get - On the store
Get it on Google Play

PM 2.5 and PM 10

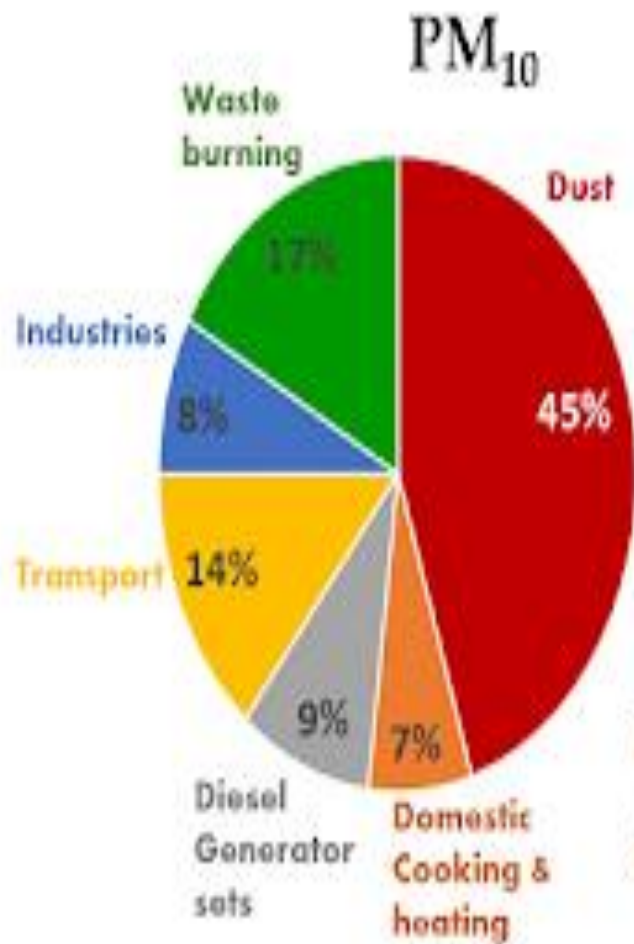
Simple: PM is **particulate matter**, and 10 and 2.5 are diameter measurements: 10 micrometers or less, and 2.5 micrometers or less.

PM 10 and PM 2.5

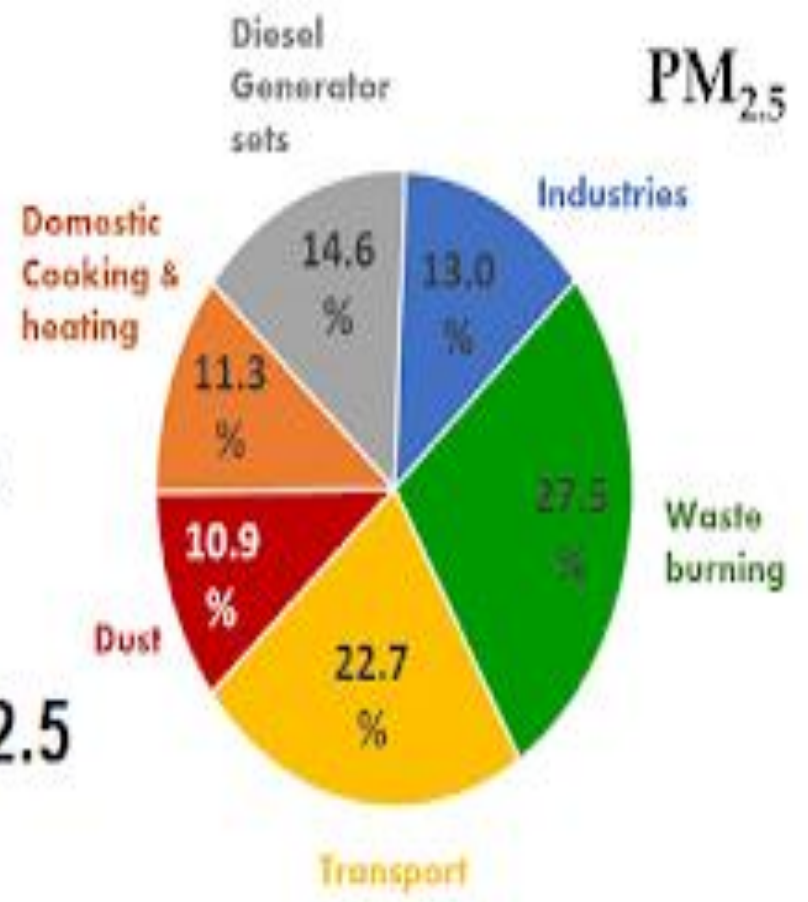
- * **PM₁₀** is **particulate matter 10** micrometers or less in diameter, **PM_{2.5}** is **particulate matter 2.5** micrometers or less in diameter. **PM_{2.5}** is generally described as fine particles. By way of comparison, a human hair is about 100 micrometres, so roughly 40 fine particles could be placed on its width

Particulate matter (PM), also called particle pollution, is a general term for extremely small particles and liquid droplets in the atmosphere

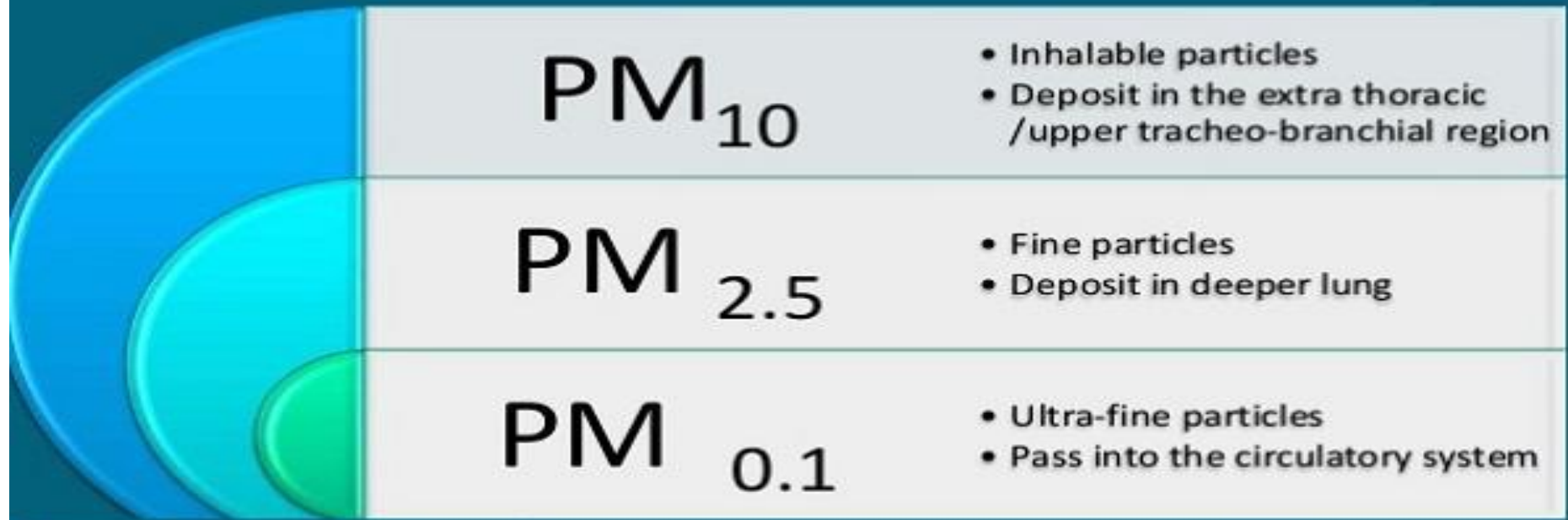
- **PM_{2.5}** (fine particles): $d \leq 2.5 \text{ m}$
- **PM₁₀** (coarse particles): $d \leq 10 \text{ m}$
- **Primary sources:** Incomplete combustion
Automobile emissions – Dust – Cooking
- **Secondary sources:** – Chemical reactions in the atmosphere



What is PM 2.5 and PM 10



Major features of particles



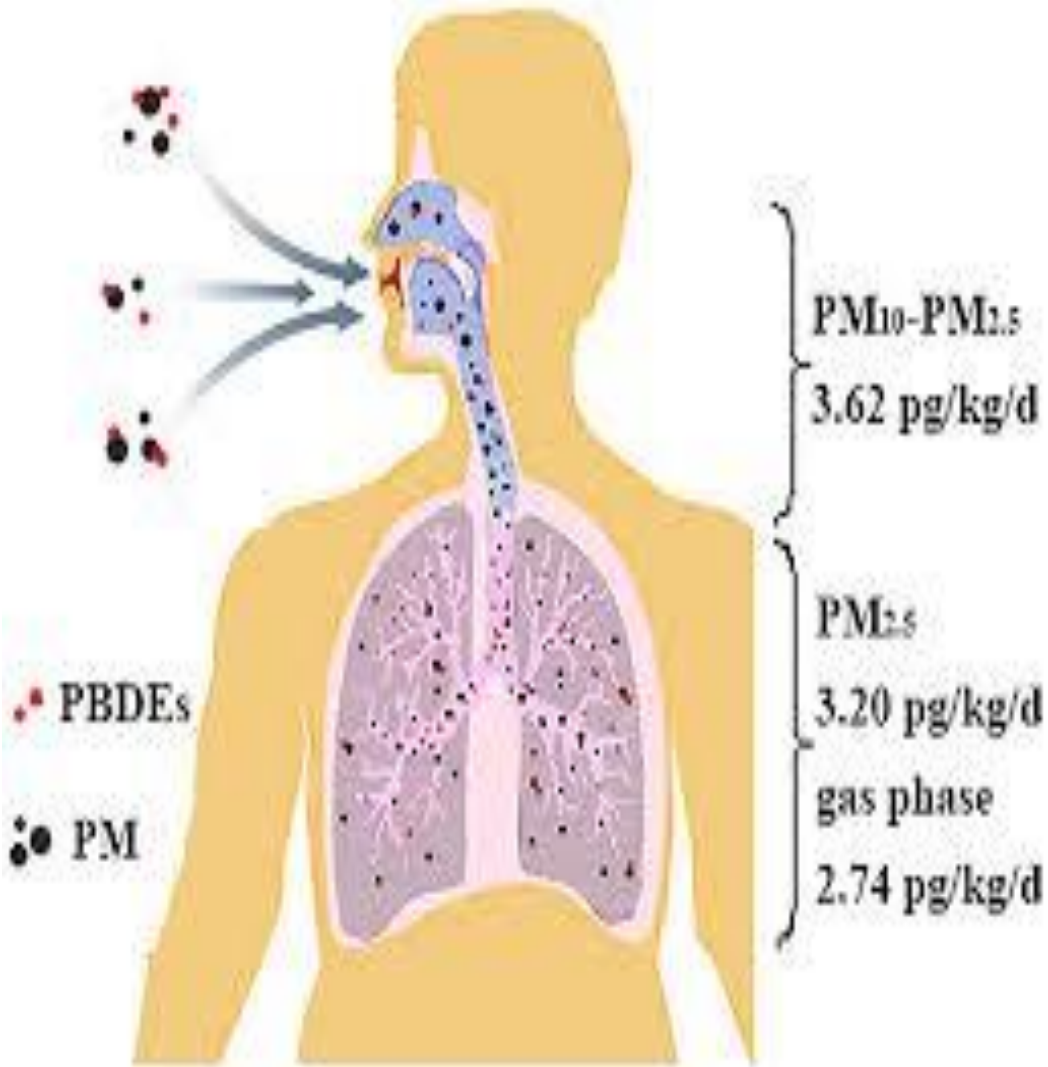
PM 2.5
Soot particle

PM 10
Dust particle

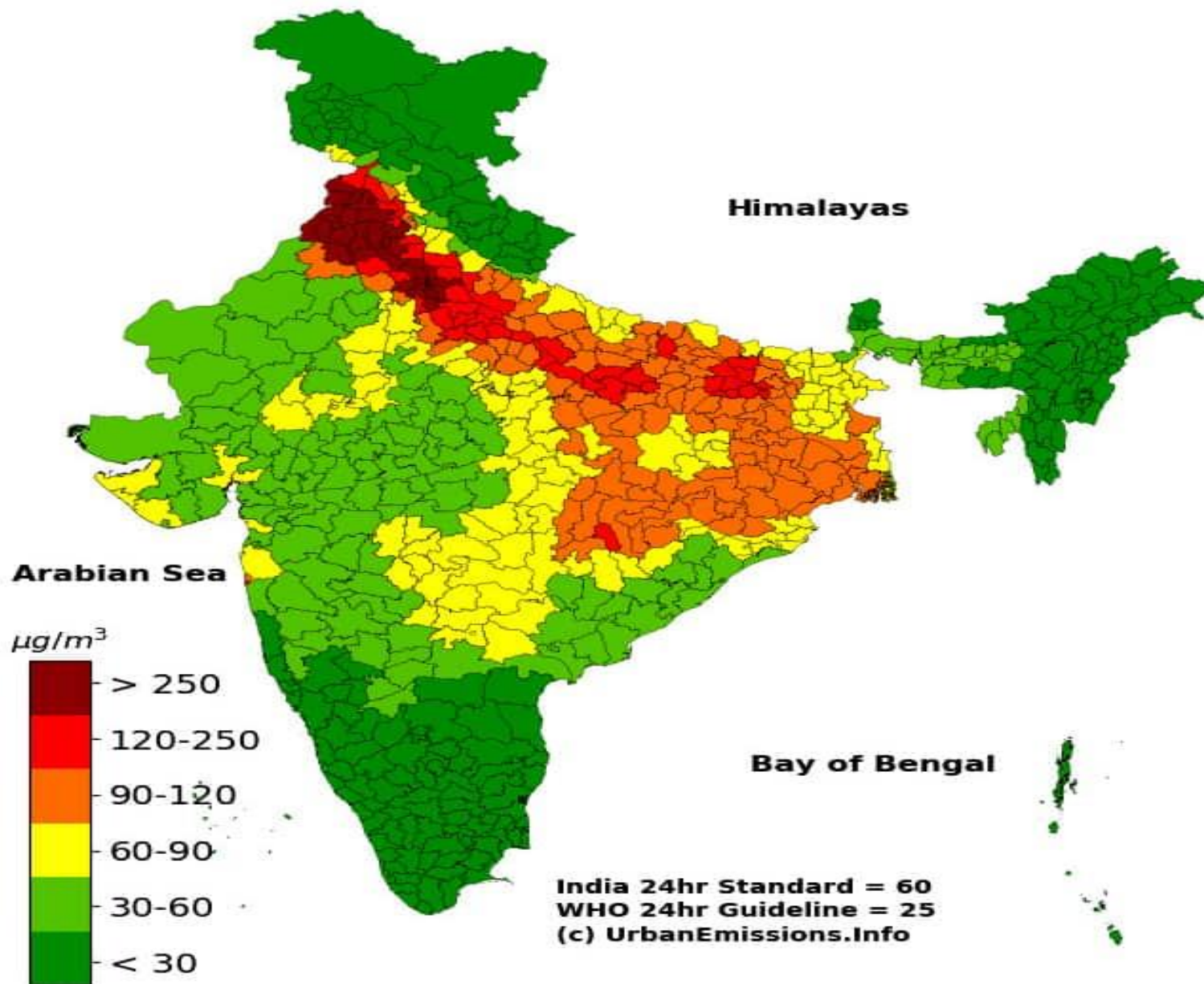
PM 50-70
Human hair

PM 90
Fine beach sand

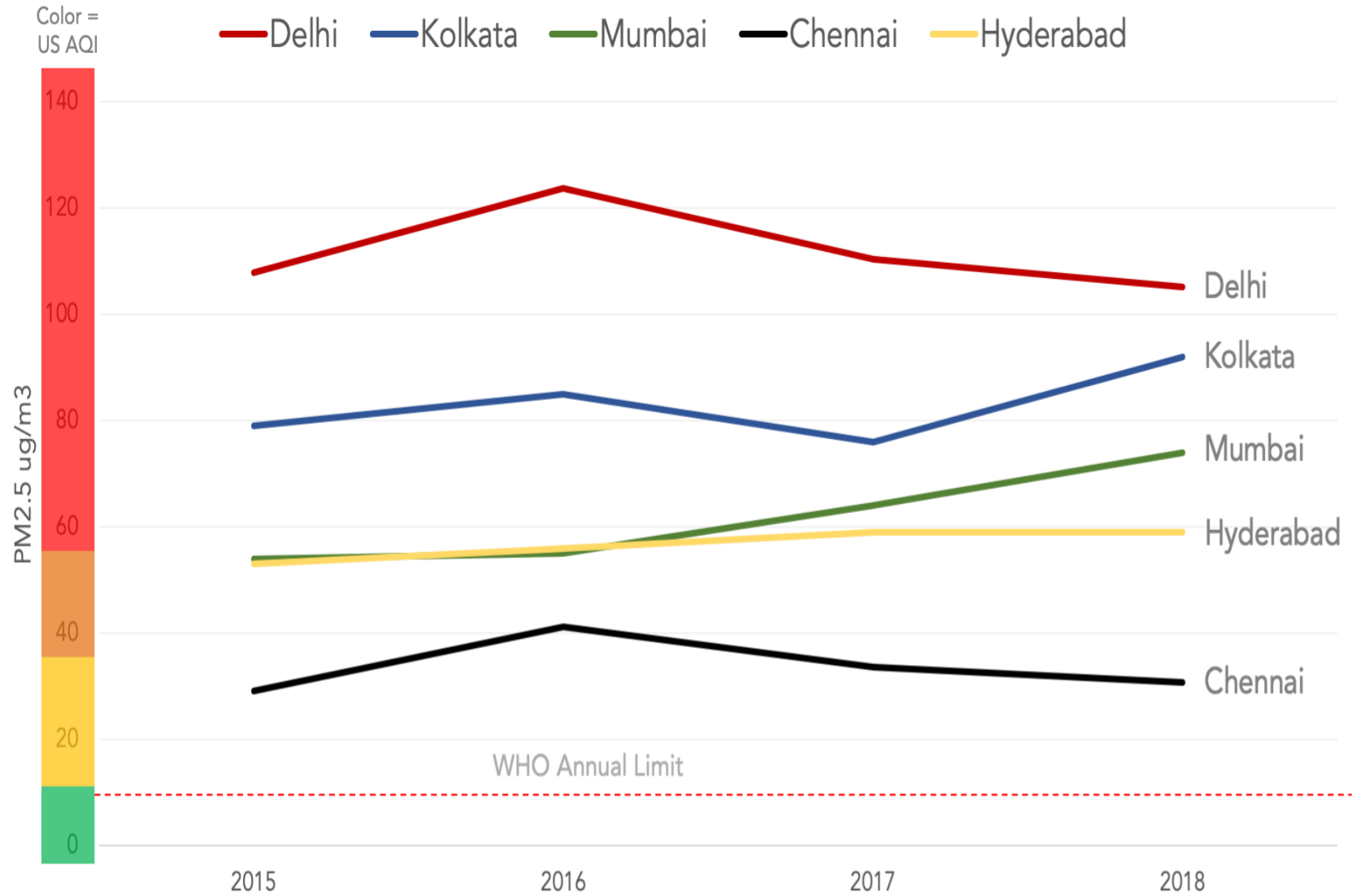
PM = picometer



India Air Quality Information: 3-day forecasts
Particulate Matter (PM2.5)
24hr Average for 08Nov2018 Thursday

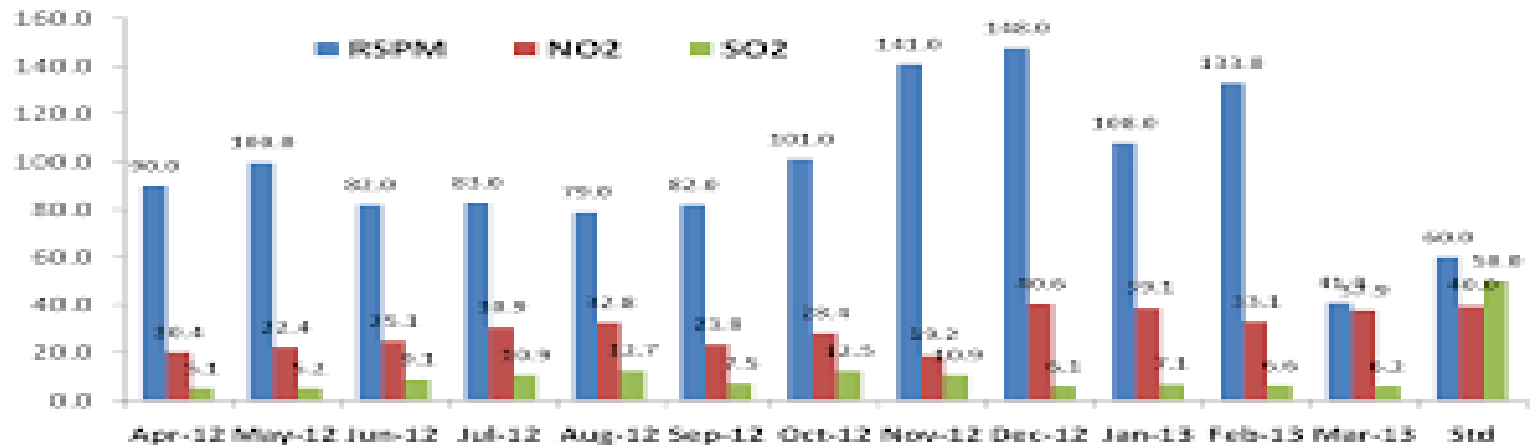


PM2.5 Pollution in Major Indian Cities: 2015-2018

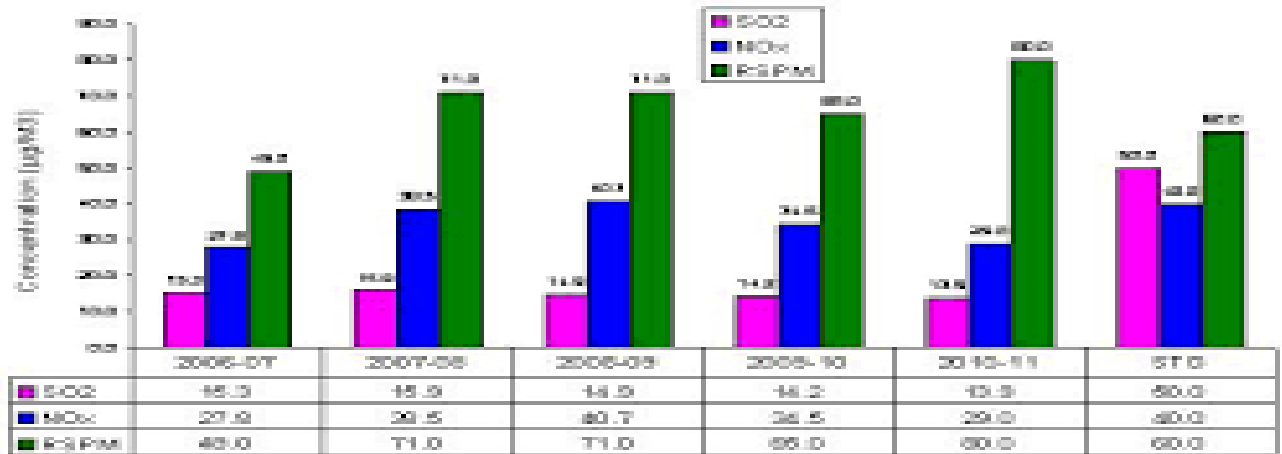


Data: US Embassy and Consulates

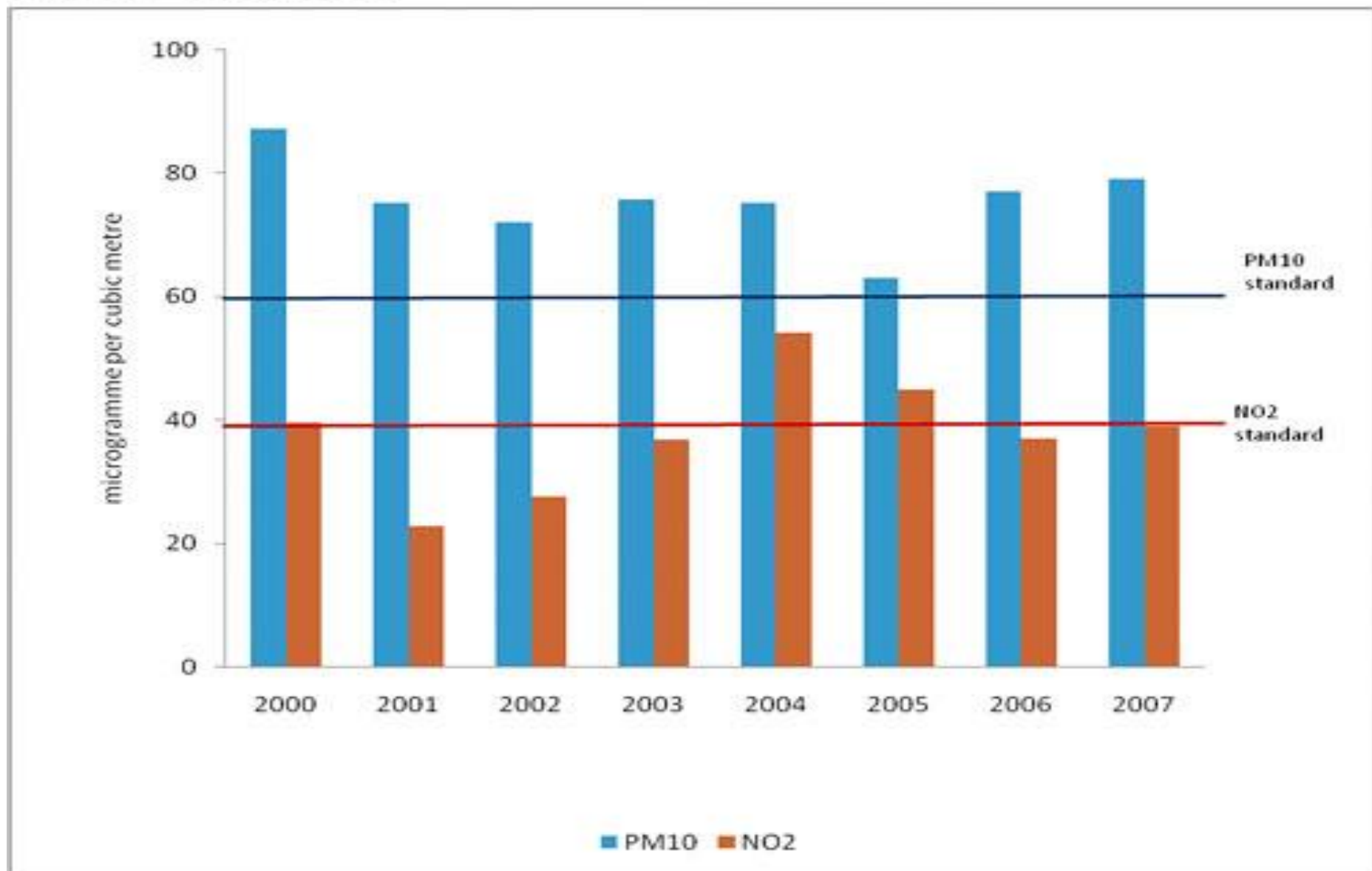
Analysis: Smart Air smartairfilters.com



Annual average values of air pollutants at AMCO Batteries, Mysore Road, as per revised standards, during the years 2006-11

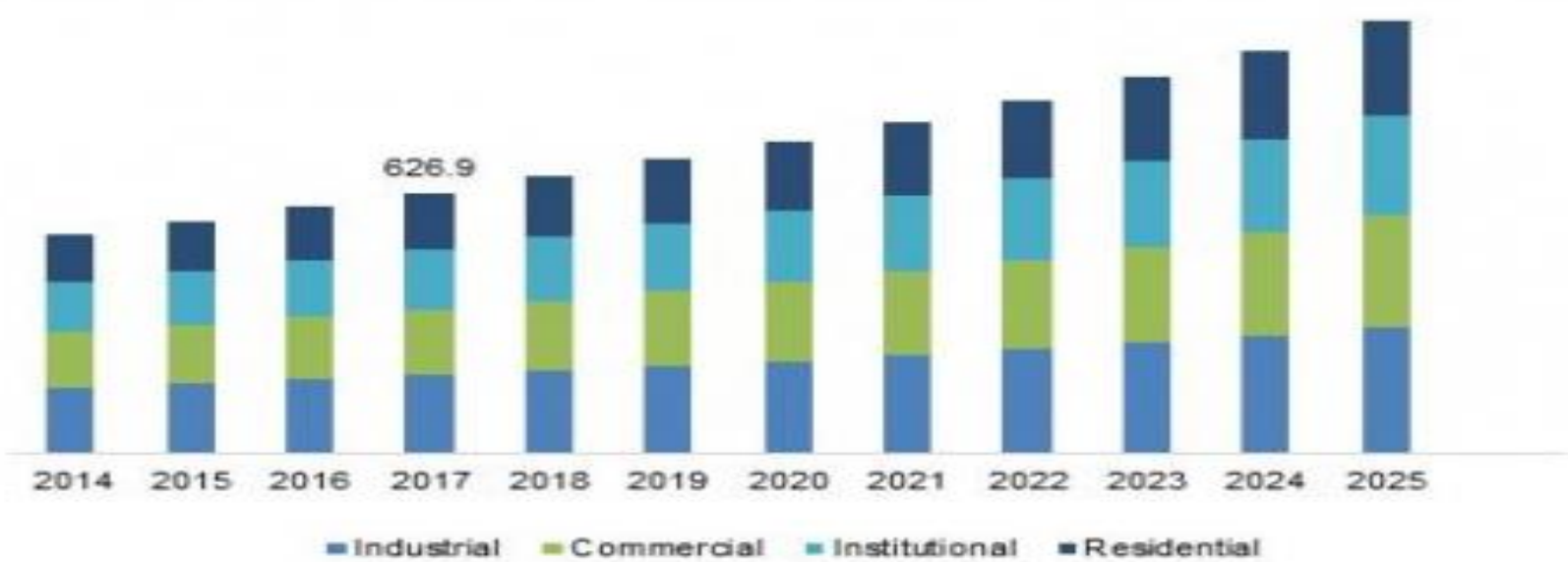
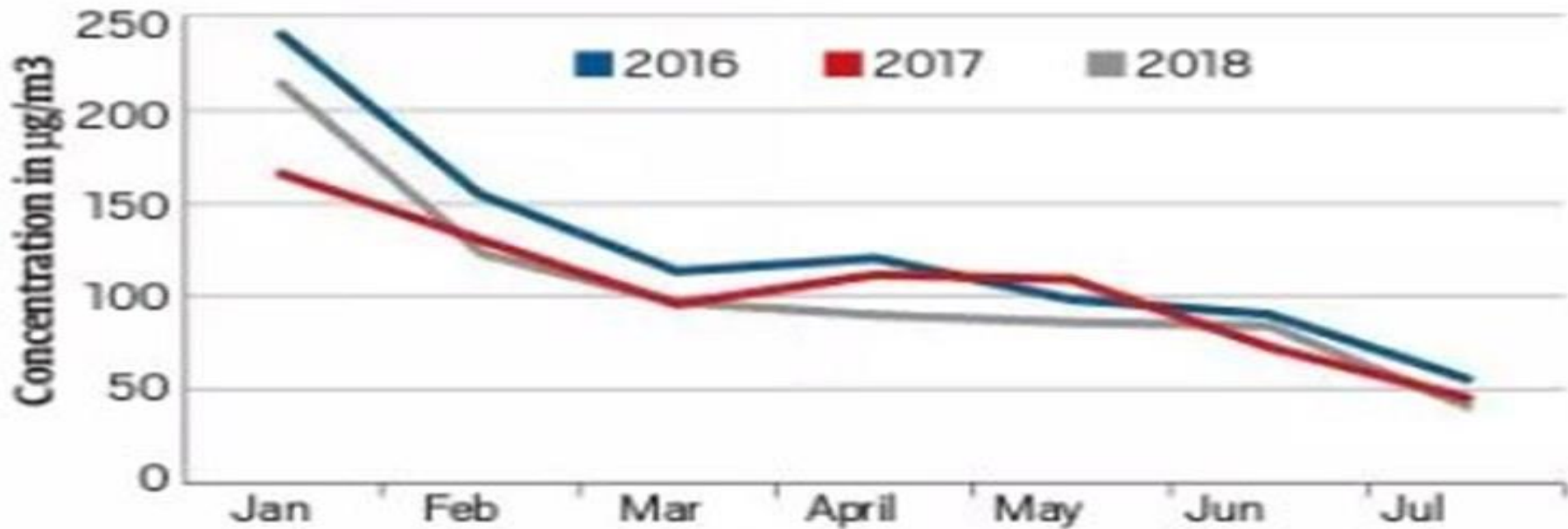


Air quality trends – Annual average levels of PM10 and NO_x



Source: CSE computation based on data provided by Central Pollution Control Board

MONTHLY COMPARATIVE VALUES OF PM 2.5



Interpretation

- * **Spatio-temporal Changes**
- * **Probable Causes of Changes**
- * **Comparative Study among stations/years/places**

Assignment

1. Download data from CPCB/WBPCB
2. Calculate and arrange the data according to your choice
3. Prepare table
4. Draw diagram based on table
5. 4/5 different varieties of diagrams
6. Writing interpretation



Thank You All