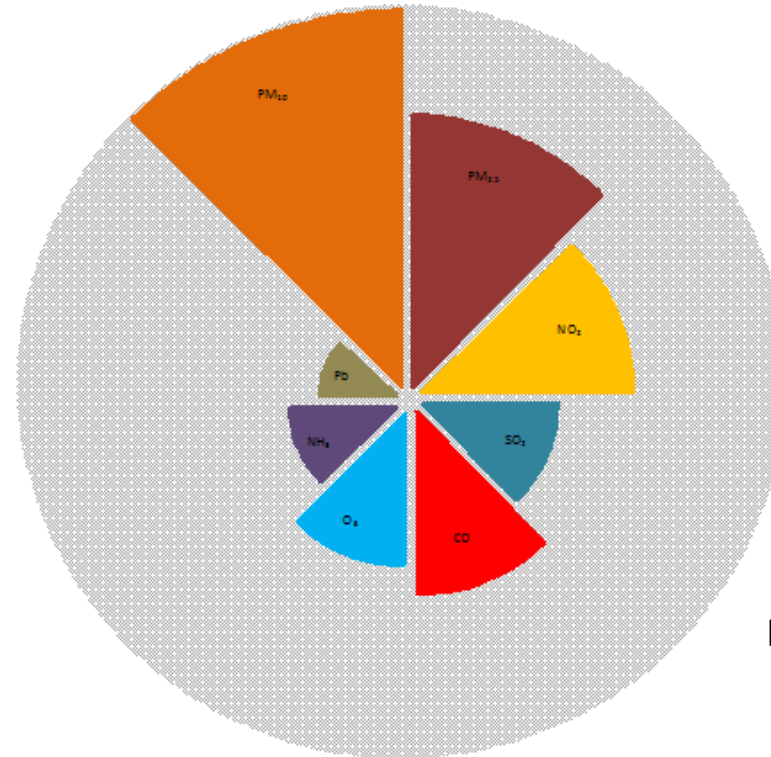


# National Air Quality Index

(How healthy is the air we breathe?)



**AQI = 230; Poor**  
**Responsible Pollutant: PM<sub>10</sub>**



**Indian Institute of Technology Kanpur, Kanpur**



**Sponsored by**  
**Central Pollution Control Board, Delhi**

# 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



# How do we know if Air Quality is poor?

AQI is an overall scheme that transforms individual air pollutant (e.g. SO<sub>2</sub>, CO, PM<sub>10</sub>) 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.



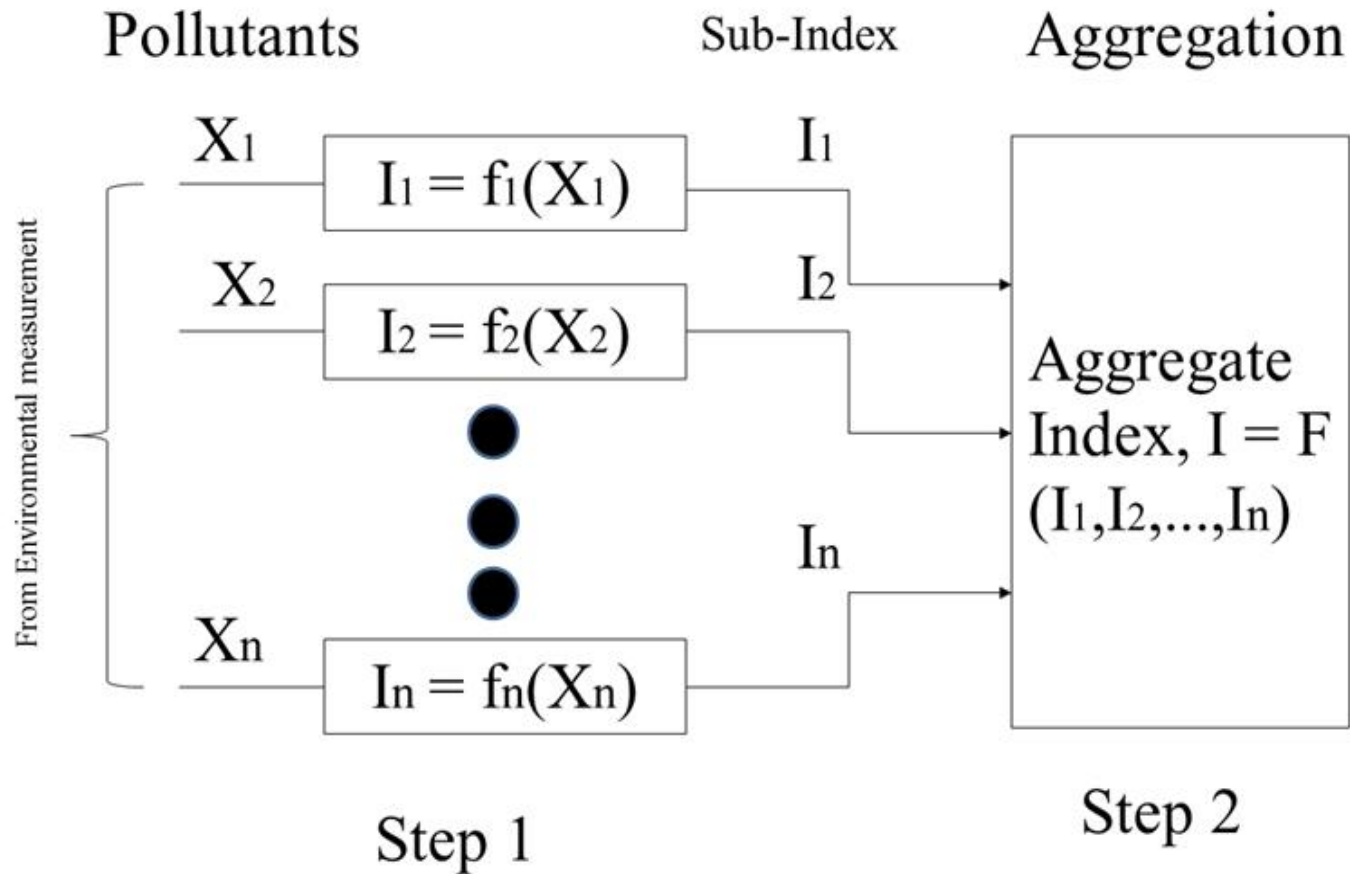
**AIR QUALITY INDEX**

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

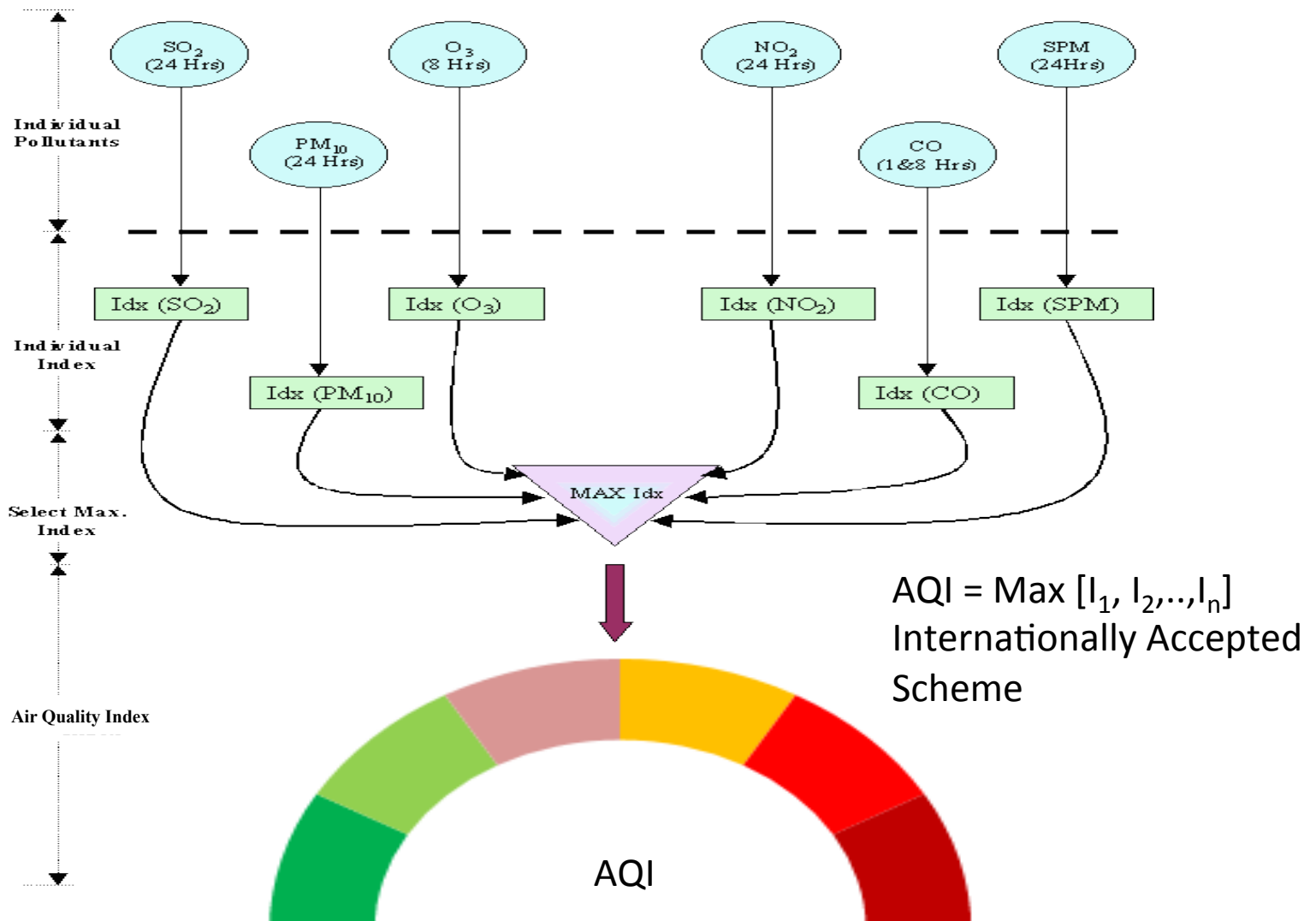
## Pollutants Considered for AQI and Air Quality Standards

Pollutant	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	O <sub>3</sub>		CO (mg/m <sup>3</sup> )		Pb	NH <sub>3</sub>
Averaging time (hr)	24	24	24	24	1	8	1	8	24	24
Indian Standard (µg/m <sup>3</sup> )	80	80	60	100	180	100	4	2	1	400

# Development of Aggregate AQI



# Sub-indices to AQI



# AQI Categories and Range

Good (0-50)	Satisfactory (51-100)	Moderate (101-200)	Poor (201-300)	Very poor (301-400)	Severe (> 401)
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**[Colour, Category, AQI Number]**

## AQI categories and breakpoint concentrations with averaging times (units: $\mu\text{g}/\text{m}^3$ unless mentioned otherwise)

AQI Category (Range)	PM <sub>10</sub> 24-hr	PM <sub>2.5</sub> 24-hr	NO <sub>2</sub> 24-hr	O <sub>3</sub> 8-hr	CO 8-hr (mg/m <sup>3</sup> )	SO <sub>2</sub> 24-hr	NH <sub>3</sub> 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+

*\*One hourly monitoring (for mathematical calculation only)*



# AQI: Health Impacts

AQI	Possible Health Impacts
<b>Good</b>	<b>minimal impact</b>
<b>Satisfactory</b>	<b>minor breathing discomfort to sensitive people</b>
<b>Moderate</b>	<b>breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults</b>
<b>Poor</b>	<b>breathing discomfort to people on prolonged exposure and discomfort to people with heart disease with short exposure</b>
<b>Very Poor</b>	<b>respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases</b>
<b>Severe</b>	<b>respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases</b>

The higher the AQI, greater the air pollution and health concerns

# Web-based AQI dissemination

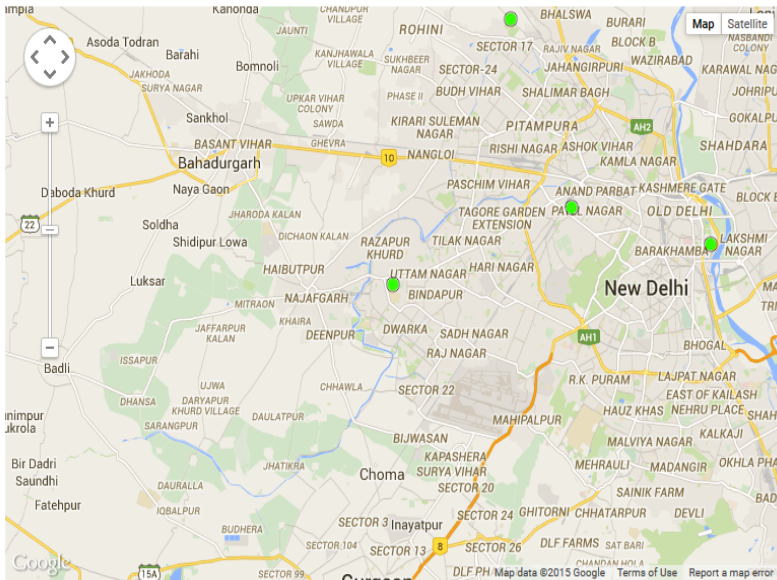
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aqi.iitk.ac.in:9000

Air Quality Index

Central Pollution Control Board,  
Ministry of Environment, Forests and Climate Change

State Delhi City Delhi Station NSIT Dwarka 10/04/2015



**Moderate**

130

Prominent Pollutant is **PM2.5**

On **Friday, 10 Apr 2015 09:00 AM**

Pollutant	Timeline	Avg	Min	Max
NO2		59	27	121
PM2.5		130	84	267
CO		28	21	45
O3		35	1	80

AQI	Remark	Color Code	Possible Health Impacts
1-50	Good		Minimal impact
51-100	Satisfactory		Minor breathing discomfort to sensitive people
101-200	Moderate		Breathing discomfort to the people with lungs, asthma and heart diseases
201-300	Poor		Breathing discomfort to most people on prolonged exposure
301-400	Very Poor		Respiratory illness on prolonged exposure
401-500	Severe		Effects healthy people and serious impacts to those with existing diseases

# Summary

- AQI: Based on Indian Air Quality Standards
- Important tool for public information and participation; real-time and transparent
- Public health protection
- Trigger actions by regulatory agencies
- Time-bound action plan and implementation
- Continuous monitoring of Air Quality status

