



Rising Air Pollution in Indian Metropolis: An Analytical Study

□ **DR. P. B. Tiwary**

Introduction:

Accuracy is a difficult goal in today adulterated era. All things are more or less polluted including water, air, food, soil and climate etc. Due to the increasing growth of world population, modern lifestyle, increasing industrialization and urbanization, the quality of natural elements is constantly getting decrease. The process in natural inter-regularity self mechanism has slowed down. India is a home to 17.5% of the world population and the second most populous country with over 1.2 billion people. There are 53 urban agglomerations in India about 43% of the urban population of India in these cities.

Air Pollution is one of the most widespread environmental problems because it occurs at many scales indoor, local, urban and regional and global.

Regional and global air pollution are especially difficult to control because polluters are often very distant from those damaged by their emission. Indian cities are reeling under multiple problems including environmental issues that they must contend with most pressing at them all is the issue of air pollution. The poor air quality that citizens are forced to breath especially in the heavily polluted cities has a detrimental impact on their health and well being.

In terms of overall impact global air pollution is perhaps the greatest single environmental challenge humans will face in the next few hundred years.

Study Area- Population residing in urban areas in India according to 1901 census was 11.4% this count 30% has per 2011 census standing at 31.16% in 2017

the numbers increased to 34%. There are 53 urban agglomerations in India with a population of 1 million or more as of 2011 against 35% in 2001. About 43% of the urban population of India lives in these cities 8 megacities population between 5 lakh to 1 crore. Mumbai, Delhi, Bangalore, Chennai, Hyderabad, Ahmedabad, Kolkata and Surat that have over 4 million people.

Hypothesis- 1. The process of urbanization and industrialization during last two decades has resulted in increased level of air pollution.

2. Air pollution is a worldwide problem. This requires efforts at the global National and local level.

3. In Indian metropolises air pollution emerges as a formidable problem in winter.

4. The problem of air pollution can be limited by further legal initiative and awareness.

Reason And Sources Of Air

Pollution- Air pollution does not recognize geographical boundaries. Just as polluted air from rural areas travels into cities too contribute towards rural pollution. Thus it is critical for antipollution efforts to be coordinated across different level. Various reason of air pollution such as- 1-Urbanization and industrialization. 2-Vehicles fumes.3-Combustion of fossil fuels.4-Volcanoes and dust storm.5-Burning of wastage.

Primarily Air Pollutants- The pollutants that are direct result of the process can be called primary pollutant. Like as- 1. Sulphur-dioxide 2. Carbon-mono-oxide 3. Nitrogen-oxides 4. Particulate matter 5. Volatile organic compounds

Secondary Pollutants- Secondary pollutants are the ones that are caused by intermingling and reaction of primary pollutants. The source of air pollution are multiple vehicular emission crop burning generation of dust particularly from construction sites depleting tree covers and poor waste management.

Common Type Of Particulate Matter

Aerosols	Any tiny solid or liquid particle
Dusts	Solid particles from grinding
Fumes	Solid particles occurring when vapour condense
Mist, fog	Liquid particles
Smoke, soot, ash	Solid particles mostly carbon from combusting
Smog	Any air pollutant

Cities with the highest small particulate measurement in the world

City	
Kanpur	173
Faridabad	172
Varanasi	151
Gaya	149
Patna	144
Delhi	143
Lucknow	138
Agra	131
Muzaffarpur	120

All Contribute towards the declaring air quality. One of the problems with tackling air pollution solely at the city level is that several factors which contribute towards. Increasing pollution levels have their origins in the bordering sub-urban areas. Pm2.5 pollutant trends.

Based On The Material Available From SOURCE

Nature of air pollution emission sources for Delhi to ambient pm2.5 pollution the contribution of

1. Vehicle exhaust in up to	30%
2. Biomass burning is up to	20%
3. Soil and road dust up to	20%
4. Industries up to	15%
5. Diesel generators is up to	10%
6. Power plant is up to	5%
7. Out side the urban airshed up to	30%

Particulate- Particulates are any particles of dispersed matter, solid or liquid. That are larger than individual molecules. The category is very complex because particulate matter varies.

Widely in composition and size, soot which arises from incomplete fuel combustion in cars and especially coal burning factories is generally the most common particulate in urban areas it comprises at least 50% of the particulate air pollution in most cities of the world. Particulate matter for a long time can lead to respiratory and cardiovascular diseases such as asthma, bronchitis, COPD, lung cancer and heart attack.

Sulphur-oxides- Sulphur-dioxide emitted from the combustion are one the major cause of air pollution. In terms of overall damage to humans and the environment SO₂ may be most serious local and regional air pollutant. SO₂ is a gas that is toxic to living things. Plants are especially sensitive, exhibiting stunted growth discoloration and reduce crop field. SO₂ is also the main cause of acid rain.

Nitrogen-dioxide And Volatile Organic Compounds- Nitrogen-oxides - and volatile organic compound are major causes of smog and other photochemical pollutant in urban areas.NO and NO₂ Create a variety of problems. Its direct effects on humans and animals including irritation of eyes, living and other mucous membranes. Plant many suffer stunted growth and death.NO and NO₂ largely produced by fuel combustion.

Carbon-mono-oxide- Carbon-mono-oxide (CO) is a deadly gas in high concentration. CO has little effect on plants or materials but in human and

animals it interferes with the ability of the red blood cells to carry oxygen to the organ. CO is produced by incomplete combustion, when fossil fuel, wood, tobacco and other organic materials burn under less than ideal condition as a result the carbon is not fully oxidized to CO₂.

Carbon-dioxide- India was the third largest emitter of carbon-dioxide in 2017 of 6.82% share of CO₂ emission about 65% of India,s CO₂ emissions in 2009 was form heating domestic used and power sector and about 9% of Indian emission were from transportation (cars, trains, two wheelers, aeroplanes and others)Indias coal fired ,oil fired and natural gass fired thermal power plants are inefficient and after significant potential for CO₂ emission.

Impact on Human Health- Many different air pollutants can impact on human health -nitrogen oxide,carbon monoxide and ozone among them. but the data base classifies air pollution is two ways;by PM_{2.5} particles smaller than 2.5 microns in diameters and PM₁₀ particles that are 10 microns in diameter. according to WHO report air pollution in 2012 caused the death of 7 million people world wide. Air pollution contribute to the premature death of 2 million indias every years. Asthma is the leading health problem faced by Indian not surprisingly it accounts for more than 50 percent of the health problems caused by air pollution.

Control of air pollution- United

nations projected that by 2050 about 64% of the developing world and 86% the developed world will be urbanized. That is equivalent to approximately 3 billion urbanized by 2050. Air pollution control requires the government of india ,state government & the common people to work together.

For anti pollution efforts to be coordinated across different levels.urban-rural and inter state responses are integral to crafting successful solution. Instituting strong emission standards for industries and introducing stronger vehicular emission standards also need to be effectively implemented.Encouraged the electronic vehicle.Certain policies and programmes focus specifically on cities ,steps like as -up gradation BS fuel, add- even

rationing etc.Municipal corporation prepare an scientific annual environmental status report.

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