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# Air Pollution in Delhi: Causes, Consequences, and Measures

AMRITTHA. A<sup>1</sup> AND SNEGHA. R<sup>2</sup>

## ABSTRACT

*One of the biggest threats to human life is air pollution. The range of air pollution in Delhi and the measures implemented to reduce them have endured many changes. As per a report by the Energy Policy Institute at the University of Chicago (EPIC), India's 1.3 billion residents face annual average pollution levels that surpass guidelines as set by the WHO. The study also revealed that over 52 crore Indians have reduced life expectancy due to air pollution. Affecting over 40 percent of our population, air pollution is a major public health issue. This paper provides detailed views of the author regarding the emerging increase in air pollution and its causes and measures that have been implemented.*

## I. THE ARISING ALARM

The historical trend has time being relieved that there is an end-to-end fluctuation in the air pollution of our capital territory. Compared to all the cities in mother India, Delhi is the worst affected city by air pollution.

India, a country that is densely populated, and its been very vulnerable to some natural blows. Of all these, air pollution is one crash the country has been facing over decades. With the developing population, the vulnerability of air pollution is also developing each day. In one statement, it can be expressed that, "*Air pollution is a silent killer for Mother India.*"

Over two decades, Air pollution has been a major outbreak in Delhi and the national capital region. Every year there existed a considerable amount

of air pollution, but this time, the Delhi government submitted its action plan to fight the air pollution.

In the recent news trend, the capital of mother India never ceased to be in top headlines pertaining to its polluted environment. For decades the air pollution in Delhi has been one of the most common components to be discussed. Every year the air quality index in Delhi kept fluctuating. Since the 1990's India, Delhi has become more toxic. Even though the legislation passed certain pollution control laws, the quality of air and nature's authentic characteristic has deteriorated. In the 1990s, the air pollution went beyond control, where the Supreme Court entered the scene and asked the Delhi Government to submit an air action plan to combat the pollution.

<sup>1</sup> Author is a Student at Government Law College, Vellore, India.

<sup>2</sup> Author is a Student at Government Law College, Vellore, India.

Over these days, many Public Interest Litigation and more of *Suo motto* notices were filed and issued wherein only for time-being the air pollution was controlled. But every year, Delhi being vulnerable to air pollution has become a very familiar topic even in today's date.

Over the decades, the remarkable year to be enlightened of being vulnerable to air pollution is 2010 & 2016. In 2016, Delhi faced the worst smog where the PM<sub>2.5</sub> levels rose by about 750 mg/m<sup>3</sup> (microgram per cubic meter), which is over 12.5 times greater than the actual limit. In 2020, the air quality was declined due to stubble burning.

In the year 2010, previously about a decade, PM10 reached an alarming increase. According to the national ambit air quality standard, the annual average for PM10 is 60 micrograms per cubic metric. But in the last three years, the PM10 reached nearly 259 in 2010. In 2009 it was 243, and in 2008 it was 198.<sup>3</sup>

Every year the air pollution showed a tremendous increase in the national capital all day. But the irony is that in the other metropolitan cities, their air was clearer where PM10 levels deteriorated compared to the previous years. For example, in 2010, the annual PM10 in Mumbai was only 94, while in Calcutta, it was 98, and in the city, Chennai PM10 was 59.

Currently, the air pollution in the capital is even worse than in 2010. Delhi observed a very poor

air quality in 2020 than in 2019. An average PM<sub>2.5</sub> concentration in 2019 was 161 mg/m<sup>3</sup>, but between December 2020- January 2021, it raised to 192 mg/m<sup>3</sup>.<sup>4</sup>

In the year 2020, the whole world was critical facing the surge of covid-19, the pandemic, and to prevent the country from the deadly disease, a series of lockdowns were imposed that prevented the movement of people from one place to another. Despite these lockdowns, Delhi had very bad air quality standards where the average PM<sub>2.5</sub> concentration during the lockdown year 2020 was 93 mg/m<sup>3</sup>, which is double the permissible PM<sub>2.5</sub> limit.<sup>5</sup>

But now, in November- December in 2021, the pollutant PM<sub>2.5</sub> concentration is about 313.3 Mg/m<sup>3</sup>, and the PM10 pollutant is 283.7 Mg/m<sup>3</sup>. Wherein, PM<sub>2.5</sub> concentration is currently 62.7 times greater than the WHO annual air quality guidelines. Also, The AQI reached the top end of the "severe" category of about 471 in November, immediately the day after Diwali.

## **II. CAUSES**

While looking on to the causes for the increasing air pollution in India's capital, there are several factors such as vehicular emission, climatic changes, factory emission, stubble burning, and the fireworks as well are accountable.

Mostly it is considered that stubble burning and fireworks create maximum air pollution. But a

<sup>3</sup> Pratul Sharma, *Delhi has the highest level of air pollution: Environment ministry*, INDIA TODAY ( Nov 30, 2011 08:49 IST) <https://www.indiatoday.in/india/north/story/delhi-is-air-pollution-capital-too-147251-2011-11-30>

<sup>4</sup> <https://www.ceew.in/sites/default/files/ceew-study-on-controlling-delhi-air-pollution-2021.pdf>

<sup>5</sup> L.S. Kurinji and others, *Bending Delhi's Air Pollution Curve*, HINDUSTAN TIMES ( Jul 24, 2021 11:47 AM IST) <https://www.hindustantimes.com/ht-insight/climate-change/bending-delhi-s-air-pollution-curve-101627105319840.html>

recent study by the Centre for Science and Environment has found that "vehicles have contributed more than half of Delhi's particulate pollution." Vehicular emission that contributes to pollution has increased from 42% in 1981 to 64% in 1991. The study reveals that vehicles cause more than 50% of the National capital's pollution between October 25 & November 8 of 2021.<sup>6</sup>

During the Center's submission to SC regarding air pollution, it was stated by the Center that it has obtained over rupees 4.8 crores as 'environmental compensation' from over a hundred transgressing industries in Delhi- NCR. They also mentioned that they penalized thousands of polluting vehicles, found 262 complaints, and charged fines worth rupees 80 lakh against them.

Sources say that there are nearly 2,263 vehicles that are 10-15 years old and unqualified for movement were seized for being used.<sup>7</sup> And also, a rupees 11.56 lakh fine was imposed for parking violations to examine vehicle idling caused by air pollution. These kinds of unqualified and old vehicles are the major reasons for the particulate pollution in Mother India's Capital.

Stubble burning, which is also considered one of the major causes of air pollution, contributes to major differences in Delhi's winter air quality. Farm fires are done by the farmers even during the summer months, too, but due to low

temperatures and low wind speeds combination in winter affects the air quality.

As per the data from the government-run monitoring agency SAFAR (System of Air Quality and Weather forecasting and Research), the contribution of stubble burning to National Capital's PM 2.5 level in November was 14.6 %

"During the second spell, the main reason for air pollution is the transport of pollutants from the rest of the Indo- Gangetic plain to Delhi combined with extreme cold and foggy conditions," said Mr. Gufan Being, founder project director of SAFAR.

There exist research to support that on days when stubble burning takes place, their conditions to PM<sub>2.5</sub> levels in Delhi are low. However, this is mostly due to favorable climatic conditions rather than proof that farm fires are harmless for Delhi's pollution levels.

Nearly every year, air pollution gags India's capital just prior to the festive season. This is mainly due to the farm fires, crackers bursting, and unfriendly climatic conditions that do not allow the pollutants to disperse. Although there was a ban on crackers and favorable climatic factors were prevailing, there is no difference that has been marked in air quality.

Diwali and pollution have turned correspondent for the inhabitants of Delhi and connected areas. An ineffective ban on firecrackers is also one of the causes for it. Many residents ignored bans on

<sup>6</sup> Vehicles are the biggest contributors among the local sources in Delhi. CENTRE FOR SCIENCE AND ENVIRONMENT (Nov 11, 2021) <https://www.cseindia.org/vehicles-the-biggest-contributors-to-winter-pollution-in-delhi-cse-11048>

<sup>7</sup> Govt lists measures to control pollution sources in

Delhi-NCR , THE ECONOMIC TIMES ( Nov 24, 2021 11:35 pm IST)<https://economictimes.indiatimes.com/news/politics-and-nation/govt-lists-measures-to-control-pollution-sources-in-delhi-ncr/articleshow/87897271.cms?from=mdr>

the use of firecrackers. Even if there are so many measures taken by the government and strict rules and penalties being imposed and even with the presence of favorable weather conditions, improper and careless human activities have led to increasing pollution.

### **III. CONSEQUENCES**

Air pollution creates a huge impact on human health, especially for those who previously suffered from some kind of respiratory problem. For example, according to the global burden of disease report, air pollution was the top risk factor for death in India in 2019.

The study from the All India Institute of Medical Science (AIIMS) states that there is a nearly 20% growth in the number of patients seeking emergency cases for severe respiratory symptoms. In addition, the number of patients has gone up to 40%, when there is an increase in PM<sub>2.5</sub> levels of around 400 micrograms between October and January.

This alarming increase in pollution leads to irritation in the eyes, throat, skin, asthma attacks, high fever, stroke, heart disease, lung cancer, and chronic and acute respiratory diseases. People who are highly affected due to this air pollution are children, elderly people, traffic police, street vendors, and delivery personnel. In addition, the day-to-day varying pollution levels also constitute a higher risk of developing long-term health issues.

### **IV. MEASURES ARE TAKEN TO CONTROL THE AIR POLLUTION**

There are legislative acts that primarily aim to prevent pollution. It is mainly the Air( pollution and control of pollution) Act, 1981. Even though there is a legislative mechanism to prevent air pollution, the actual combat can be done only by the implementation of the laws by the state government. In this part of the Article, the author throws attention to the measures taken by the Delhi government and Center in combating pollution from a socio-legal perspective

The air pollution in Delhi has always obtained the saturation point wherein the Supreme Court must consistently intervene to ensure if the Delhi government implements preventive measures.

For the first time, the Supreme Court in 1985 ordered the clampdown of hazardous industries. The AQI of the permissible limit is only 100 micrograms per cubic meter. But when the limit reaches 101 to 200, it accounts for moderate AQI, Very poor category accounts for 301 to 400 of AQI, reaches severe category when AQI reaches 410 to 500 and when the AQI attains greater than 500, then it accounts to hazardous category.<sup>8</sup>

But now, the AQI has reached the hazardous level for which doctors have declared this condition a public health crisis. To combat this air pollution, the Delhi government has implemented various measures.

#### **1) ODD-EVEN POLICY:**

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<sup>8</sup> Delhi Air Pollution: A Case Study, CHATTISGARH INSTITUTE OF DIGITAL

MARKETING, <https://www.cidm.co.in/delhi-air-pollution-case-study/>

The old even scheme regulates the traffic to put an end to vehicular pollution. Odd-Even scheme works in such a way that the cars have a registered number ending with an odd number ply on one day and the number ending with an even number ply on the other day (the next day). By implementing this scheme, the most harmful pollutant, PM<sub>2.5</sub>, deteriorated to 429 from the high of 606. This ensured about a 40% dip in PM<sub>2.5</sub>.

### **2) MANDATORY PUC CERTIFICATE OF PETROL DRIVEN VEHICLES TEST FOR CO & HYDROCARBONS:**

The Supreme court of India has promulgated the mandatory use of CNG as automotive fuel in Delhi for public transports. Apart from public transport like buses, taxis, and three-wheelers, some private vehicles operate on CNG. One significant point is eight-year-old buses, and pre 1990s taxis have been scrapped, and nearly 25,000 autos, 9000 buses, 8,000 taxis run on CNG.

Apart from this, the government has amended several amendments in Motor Vehicles Act (1988) and Central Motor Vehicles Rules (1989) to make an effective reduction in pollution by vehicular emission.

The role of SC in preventing air pollution is noteworthy. It was the apex court that made a serious direction on July 28, 1998, which directed all public transport to run only on CNG. During that period, only a few people were keen about the direction. But, finally, in January 2002, the SC issued the deadline for implementing the CNG conversion. After this, vehicular emission had reported a significant decrease.

### **3) BAN ON CONSTRUCTION AND STRICT COMPLIANCE OF GRADED RESPONSE ACTION PLAN.**

In 2017, as per the report by the Environmental pollution (prevention and control) Authority {EPCA}, the supreme ordered strict compliance of direction.

In the previous year, the construction and demolition waste management notification was issued by MoEF & CC. This notification is one step forward to controlling pollution. With this new notification, the recycle and reuse of construction and demolition waste was made into a reusable product that had a minimal market value.

The supreme court in the year 2020 has also approved, the GRAP which ordered, " the construction activities has to be stopped if the AQI Reaches the scale of 500+.

The other steps taken by the government to prevent air pollution include the enhancement of parking fees by four times, restriction for the entry of trucks, the banning of waste burning, and industrial activities by the national green tribunal.

## **V. RIGHT TO CLEAN ENVIRONMENT: A CONSTITUTIONAL MANDATE**

A healthy environment is an integral aspect of the right to life. This right to a clean environment is necessary not only for human beings but also for other animals' existence.

In *Consumer Education and Research Centre V. Union of India*,<sup>9</sup> the right to health is integral to lead mere life and right of life under part III of the Indian constitution.<sup>10</sup>

The right to life under Article 21 includes free water and free air from pollution for the full enjoyment of life. In the case of *Subhash Kumar V. State of Bihar*<sup>11</sup>, the Supreme court held the same.<sup>12</sup>

In the case of *T. Ramakrishna Rao V. Hyderabad Development Authority*<sup>13</sup>, the High Court held that protecting the environment is the right of both citizens and the state. Article 21 also embraces the protection and preservation of the environment. If this is not done, then it will be the reason for environmental pollution, which is a slow death and also violates article 21 of the Indian Constitution.

The right to health also includes, right to live in a clean environment. There are a large number of existing laws among which the Indian constitution guarantees the right to live in a clean environment is a fundamental right.

In the case of *Andhra Pradesh Pollution Control Board V M.V.Nayudu*<sup>14</sup>. In this case, the SC held that "Not mere animal existence is right to life, but living in better condition with proper basic needs like air and water is right to life." Also,

Justice Jagannath Rao added that human rights issues and environmental problems are to be treated on the same pedestal.

Thus, while interpreting our current issue, air pollution causes many health issues, and as per the Indian constitution, it is the duty of both citizens and the government to protect the environment. Thus, protecting the environment is a constitutional mandate.

## VI. CONCLUSION

To prevent air pollution from alarming environmental and health collapse, efforts are being fortified. The government of Delhi and the other respective authorities are taking the utmost steps to reduce the level of air pollution. The right to a clean environment is a basic right to the citizen, and this right cannot be attained only by implementing the initiatives taken by the legislative and the executive but only when citizens start preventing the environment from their end. One such responsibility people can carry out immediately is traveling long unnecessarily and avoiding the burning of wastes. Government should consider providing improved quality of fuel so that it may reduce or may not cause pollution at all. Growing more air purifying plants will also be more beneficial to control air pollution. India being the 2nd largest populated nation in the world, it is expected that

<sup>9</sup> Consumer Education and Research Centre V. Union of India, 1995 AIR 922, 1995 SCC (3) 42

<sup>10</sup> Right to health as fundamental right guaranteed by constitution of India, JSA ADVOCATES AND SOLICITORS, (22 March, 2020) <https://www.jsalaw.com/covid-19/right-to-health-as-a-fundamental-right-guaranteed-by-the-constitution-of-india/>

<sup>11</sup> Subhash Kumar V. State of Bihar 1991 AIR 420, 1991 SCR (1) 5

<sup>12</sup> Aayush Akar and Hitesh Gangwani,Article 21: Right To Healthy Environment- An interpretation, LATEST LAWS.COM (Nov17, 2019) [https://www.latestlaws.com/articles/article-21-right-to-healthy-environment-an-interpretation-by-aayush-akar-and-hitesh-gangwani/#\\_ftn31](https://www.latestlaws.com/articles/article-21-right-to-healthy-environment-an-interpretation-by-aayush-akar-and-hitesh-gangwani/#_ftn31)

<sup>13</sup> T. Ramakrishna Rao V. Hyderabad Development Authority 2002 (2) ALT 193

<sup>14</sup> Andhra Pradesh Pollution Control Board V M.V.Nayudu (1999) 2 SCC 718

people should cooperate with the government for  
a better environment and a healthy and safer life.

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